



September 11, 2017

**MEMORANDUM TO:** Deanna Riffey, Environmental Program Consultant  
Environmental Analysis Unit, NCDOT

**FROM:** Sara Easterly, Senior Environmental Scientist  
HDR

**SUBJECT:** Jurisdictional Resources and Protected Species Review of  
Access Roads for Complete 540, Wake and Johnston  
Counties, Divisions 5 and 6, TIPs. R-2721, R-2828, and  
R-2829

HDR Engineering, Inc. of the Carolinas (HDR) has completed an environmental review of access roads for the Complete 540 – Triangle Expressway Southeast Extension project in Wake and Johnston Counties. The Complete 540 improvements include the extension of the Triangle Expressway from NC 55 Bypass in Apex to the US64/US 264 Bypass in Knightdale. All the access road study areas (study areas) presented within this memorandum were located within Wake County. HDR reviewed the study areas on August 14, 15, and 16, 2017 for threatened and endangered species under Section 7 of the Endangered Species Act and for jurisdictional wetlands and streams using the methodology outlined in the 1987 US Army Corps of Engineers Wetland Delineation Manual and the 2010 Eastern Mountains and Piedmont Regional Supplement. The following tables and discussion illustrate the findings.

### **WATER RESOURCES**

Water resources in the study areas are part of the Neuse and Cape Fear River basins [United States Geological Survey (USGS) Hydrologic Units 03020201 and 03030004]. Eleven streams were identified in the study areas (Table 1). The locations of these water resources are shown on the attached figures. The physical characteristics of these streams are provided in Table 2 and jurisdictional characteristics are in Table 3. Seven streams were extended from previous delineations captured in the 2014 Natural Resources Technical Report (NRTR) by Mulkey Engineers and four new streams were added. Note that previous stream forms for streams that had to be extended were field verified.

**Table 1. Water resources in the study areas**

<b>Stream Name</b>	<b>Map ID</b>	<b>NCDWQ Index Number</b>	<b>Best Usage Classification</b>
Big Branch*	Big Branch	18-7-6-1	C
Middle Creek	SO	27-43-15-(1)	C;NSW
UT to Little Branch	SE	18-7-6-1-1	C
UT to Rocky Branch	SAB	27-43-15-4.5	C;NSW
UT Bells Lake	SAR	27-43-15-6	C;NSW
UT to Mills Branch	SBJ	27-43-15-7	C;NSW
UT to Swift Creek	SFJ	27-43-(8)	C;NSW
UT to Neuse River	SHC	27-(22.5)	C;NSW
UT to Little Branch*	SSF	18-7-6-1-1	C
UT to Middle Creek*	SSH	27-43-15-(1)	C;NSW
UT to Mills Branch*	SSI	27-43-15-7	C;NSW

\* New streams found during review

**Table 2. Physical characteristics of water resources in the study areas**

<b>Map ID</b>	<b>Bank Height (ft)</b>	<b>Bankful Width (ft)</b>	<b>Water Depth (in)</b>	<b>Channel Substrate</b>	<b>Velocity</b>	<b>Clarity</b>
Big Branch	1-2	2-8	2-18	Sa, Gr, Si	Moderate	Clear
SO	4	15-20	4-18	Sa, Si, Gr	Moderate	Slightly Turbid
SE	1-2	2-5	1-12	Sa, Si, Gr, Co, Bd	Slow	Clear
SAB	2-3	4	0	Gr, Co, Sa	NA	NA
SAR	2-4	8	0	Sa, Gr, Co	NA	NA
SBJ	1-3	4-6	4-18	Sa, Gr, Si	Moderate	Slightly Turbid



**Table 2. Physical characteristics of water resources in the study areas (Cont.)**

Map ID	Bank Height (ft)	Bankful Width (ft)	Water Depth (in)	Channel Substrate	Velocity	Clarity
SFJ	8-10	5-7	2	Sa, Gr	Slow	Clear
SHC	6	8-10	2-6	Sa, Gr	Moderate	Clear
SSF	2-4	12	2-18	Si, Sa	Slow	Slightly Turbid
SSH	4	4	1-3	Gr, Si, Sa	Slow	Clear
SSI	6-12	4	2-12	Sa, Gr, Si	Moderate	Slightly Turbid

Notes: Bd=Bedrock, Gr=Gravel, Sa=Sand, Si=Silt, Co=Cobble  
 NA = stream had no flow during review

**Table 3. Jurisdictional characteristics of water resources in the study areas**

Map ID	Length (ft.)	Classification	Compensatory Mitigation Required	River Basin Buffer
Big Branch	156	Perennial	Yes	Subject
SO	93	Perennial	Yes	Subject
SE	469	Intermittent	Yes	Subject
SAB	173	Ephemeral*	Yes	Subject
SAR	230	Intermittent	Yes	Subject
SBJ	63	Perennial	Yes	Subject
SFJ	20	Intermittent	Yes	Subject
SHC	178	Perennial	Yes	Subject
SSF	460	Perennial	Yes	Subject
SSH	72	Intermittent	Yes	Subject
SSI	85	Intermittent	Yes	Subject
<b>Total</b>	<b>1,999</b>			

\* Previously delineated as Perennial and approved by the USACE. It will need confirmation by the USACE for status change.

One pond is located within the study areas (Figure 15). This pond consists of an artificially excavated pit that is sustained by high groundwater levels. Approximately 0.09 acre of the pond is located within the study area. The total area of the pond is 0.67 acre.

No High Quality Waters (HQW), Outstanding Resource Waters (ORW), or water supply watersheds (WS-I or WS-II) waters occur within 1.0 mile of the study areas. Additionally, no streams within the study areas support trout or anadromous fish and no Primary Nursing Areas are present. No streams within 1.0 mile downstream of the study areas were identified on the North Carolina 2014 Final 303(d) list of impaired waters.

No benthic samples have been conducted within 1.0 mile of the study areas. No fish surveys have been conducted within 1.0 mile of the study areas.

### **JURISDICTIONAL WETLANDS**

Fifteen jurisdictional wetlands were identified within the study areas and are shown on the attached figures. Wetland classification and quality rating data are presented in Table 4. Five wetlands were extended from previous delineations captured in the 2014 NRTR by Mulkey Engineers and ten new wetlands were added. Note that previous wetland delineation forms for wetlands that had to be extended were field verified.

**Table 4. Jurisdictional characteristics of wetlands in the study areas**

<b>Map ID</b>	<b>NCWAM Classification</b>	<b>Hydrologic Classification</b>	<b>Area (ac.)</b>
WR	Bottomland Hardwood Forest	Riparian	0.12
WS	Bottomland Hardwood Forest	Riparian	0.30
WBC	Bottomland Hardwood Forest	Riparian	0.44
WBZ	Bottomland Hardwood Forest	Riparian	0.08
WDE	Bottomland Hardwood Forest	Riparian	0.09
WVX*	Headwater Forest	Non-Riparian	0.10
WVZ*	Headwater Forest	Non-Riparian	0.05
WWB*	Non-Tidal Freshwater Marsh	Non-Riparian	0.01
WWC*	Seep	Non-Riparian	0.01
WWD*	Non-Tidal Freshwater Marsh	Riparian	0.76
WWE*	Headwater Forest	Non-Riparian	<0.01

**Table 4. Jurisdictional characteristics of wetlands in the study areas (Cont.)**

Map ID	NCWAM Classification	Hydrologic Classification	Area (ac.)
WWF*	Bottomland Hardwood Forest	Riparian	0.05
WWG*	Headwater Forest	Riparian	0.03
WWH*	Bottomland Hardwood Forest	Riparian	0.16
WWI*	Bottomland Hardwood Forest	Riparian	0.49
* New wetlands found during review.			<b>Total</b>
			<b>2.70</b>

### **FEDERALLY PROTECTED SPECIES**

As of July 10, 2017, the United States Fish and Wildlife Service (USFWS) lists four federally protected species for Wake County (Table 5). A brief description of the species' habitat requirements follows along with the Biological Conclusion rendered based on survey results in the study areas.

**Table 5. Federally protected species listed for Wake County**

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
<i>Picoides borealis</i>	Red-cockaded woodpecker	E	No	No Effect
<i>Alasmodonta heterodon</i>	Dwarf wedgemussel	E	Yes	May Affect, Likely to Adversely Affect
<i>Rhus michauxii</i>	Michaux's sumac	E	Yes	No Effect

E - Endangered

T - Threatened

TBD – To be determined

#### **Red-cockaded woodpecker**

USFWS Recommended Survey Window: year round; November-early March (optimal)

Habitat Requirements: The red-cockaded woodpecker (RCW) occupies open, mature stands of southern pines, particularly longleaf pine, for foraging and nesting habitat. The RCW typically nests in pine trees that are >60 years old, and which are contiguous with pine stands at least 30 years of age to provide foraging habitat. The foraging range of the RCW is normally no more than 0.5 miles.

Biological Conclusion: No Effect

No suitable foraging or nesting habitat was present in the study areas. Based on these findings, the biological conclusion within the study areas is that the proposed project would have no effect on red-cockaded woodpecker.

### **Dwarf wedgemussel**

USFWS Recommended Survey Window: year round

**Habitat Description:** In North Carolina, the dwarf wedgemussel is known from the Neuse and Tar River drainages. The mussel inhabits creek and river areas with a slow to moderate current and sand, gravel, or firm silt bottoms. Water in these areas must be well oxygenated. Stream banks in these areas are generally stable with extensive root systems holding soils in place.

**Biological Conclusion:** May Affect, Likely to Adversely Affect

A thorough description of the habitat assessment and survey results for the dwarf wedgemussel were provided in a September 2017 draft biological assessment along with the rationale for the biological conclusion. The Complete 540 project is expected to result in unavoidable adverse impacts to the dwarf wedgemussel. This draft biological assessment was submitted to the USFWS on September 6, 2017.

### **Michaux's sumac**

USFWS Optimal Survey Window: May-October

**Habitat Description:** Michaux's sumac, endemic to the inner Coastal Plain and lower Piedmont, grows in sandy or rocky, open, upland woods on acidic or circumneutral, well-drained sands or sandy loam soils with low cation exchange capacities. The species is also found on sandy or submesic loamy swales and depressions in the fall line Sandhills region as well as in openings along the rim of Carolina bays; maintained railroad, roadside, power line, and utility rights-of-way; areas where forest canopies have been opened up by blowdowns and/or storm damage; small wildlife food plots; abandoned building sites; under sparse to moderately dense pine or pine/hardwood canopies; and in and along edges of other artificially maintained clearings undergoing natural succession. In the central Piedmont, it occurs on clayey soils derived from mafic rocks. The plant is shade intolerant and, therefore, grows best where disturbance (*e.g.*, mowing, clearing, grazing, and periodic fire) maintains its open habitat.

**Biological Conclusion:** No Effect

Suitable habitat for Michaux's sumac is present within the study areas along roadside shoulders and edges of maintained open areas. HDR biologists conducted surveys for Michaux's sumac within the study areas on August 14, 15, and 16, 2017. No individuals of the species were found during the surveys. A review of North Carolina Natural Heritage Program (NCNHP) records, updated June 2017,

indicated no element occurrences within 1.0 mile of the study areas. Based on this information, no effects to Michaux's sumac would occur within the study areas.

### **Northern long-eared bat**

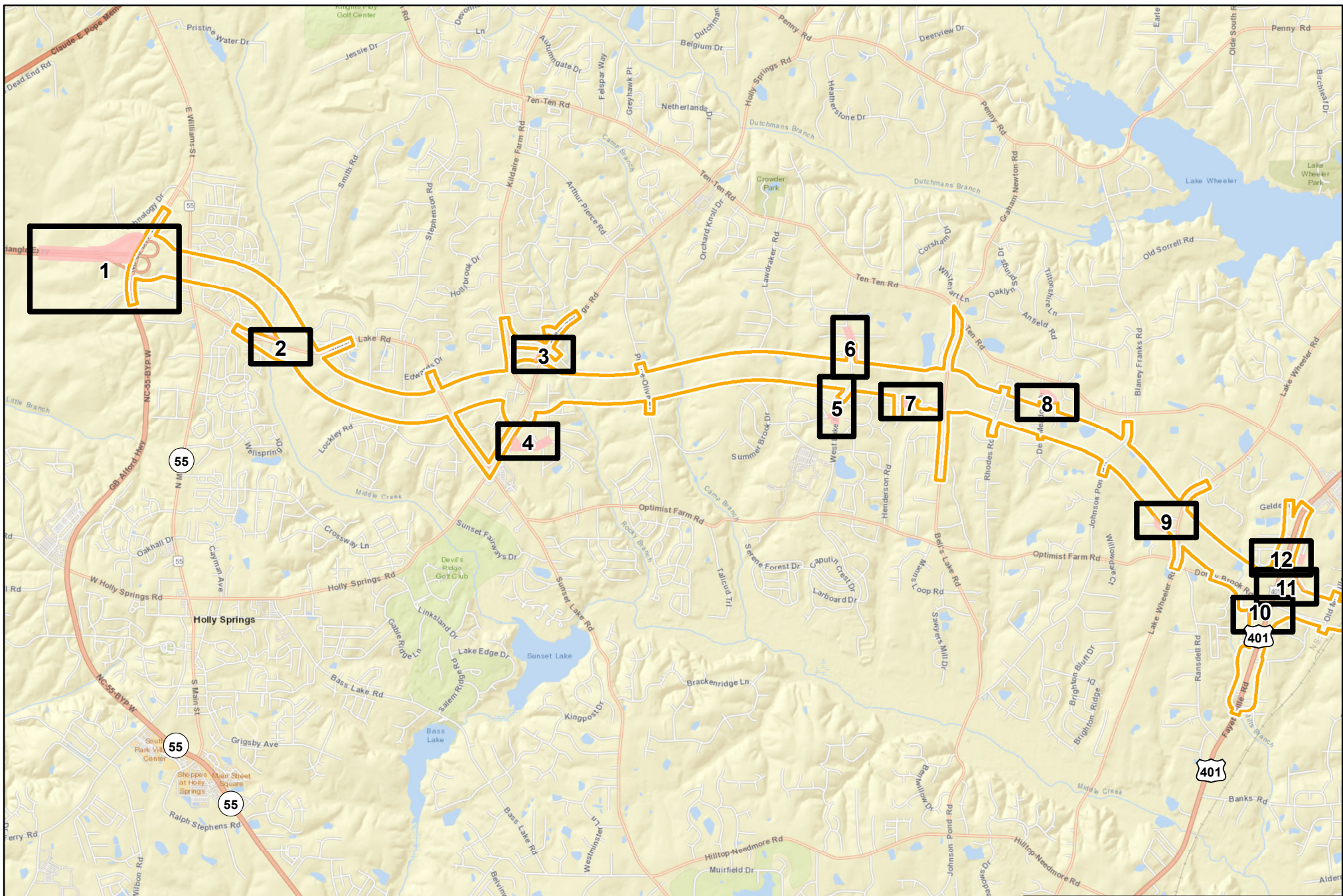
The US Fish and Wildlife Service developed a programmatic biological opinion (PBO) in conjunction with the Federal Highway Administration (FHWA), the US Army Corps of Engineers (USACE), and NCDOT for the northern long-eared bat (NLEB) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. The programmatic determination for NLEB for the NCDOT program is "May Affect, Likely to Adversely Affect". The PBO provides incidental take coverage for NLEB and will ensure compliance with Section 7 of the Endangered Species Act for five years for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Wake County.

### **Bald Eagle and Golden Eagle Protection Act**

Habitat for the American bald eagle primarily consists of mature forest in proximity to large bodies of open water for foraging. Large dominant trees are utilized for nesting sites, typically within 1.0 mile of open water.

No water bodies large enough or sufficiently open to be considered potential foraging sources were identified within the study areas. Since there was no foraging habitat within the study areas, a survey of the study areas and the area within 660 feet of them was not conducted. Additionally, a review of the NCNHP database revealed no known occurrences of this species within 1.0 mile of the study areas. Due to the lack of nesting and known occurrences it has been determined that proposed construction within the study areas will not affect this species.





**COMPLETE 540**  
TIP R-2721  
Wake County



PRELIMINARY : SUBJECT TO CHANGE

NOT TO SCALE



Figure Borders



Additional  
Survey Limits



Orange Corridor

**Additional Limits Natural  
Resources Surveys**

**R-2721 Figure Index**





PRELIMINARY : SUBJECT TO CHANGE

0 250 500 1,000  
Feet

Additional Survey Limits measured 250' from -L- centerline

- Additional Survey Limits
- R-2721 Study Area

- Additional Wetlands
- Additional Streams
- Additional Ponds
- Wake County Streams

- Prior Verified Streams
- Prior Verified Wetlands
- Prior Verified Ponds

**Additional Limits  
Natural Resources  
Surveys**

Figure 1





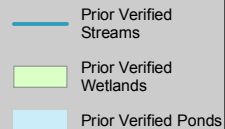
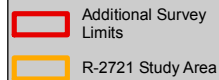
**COMPLETE 540**  
TIP R-2721  
Wake County



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400 Feet

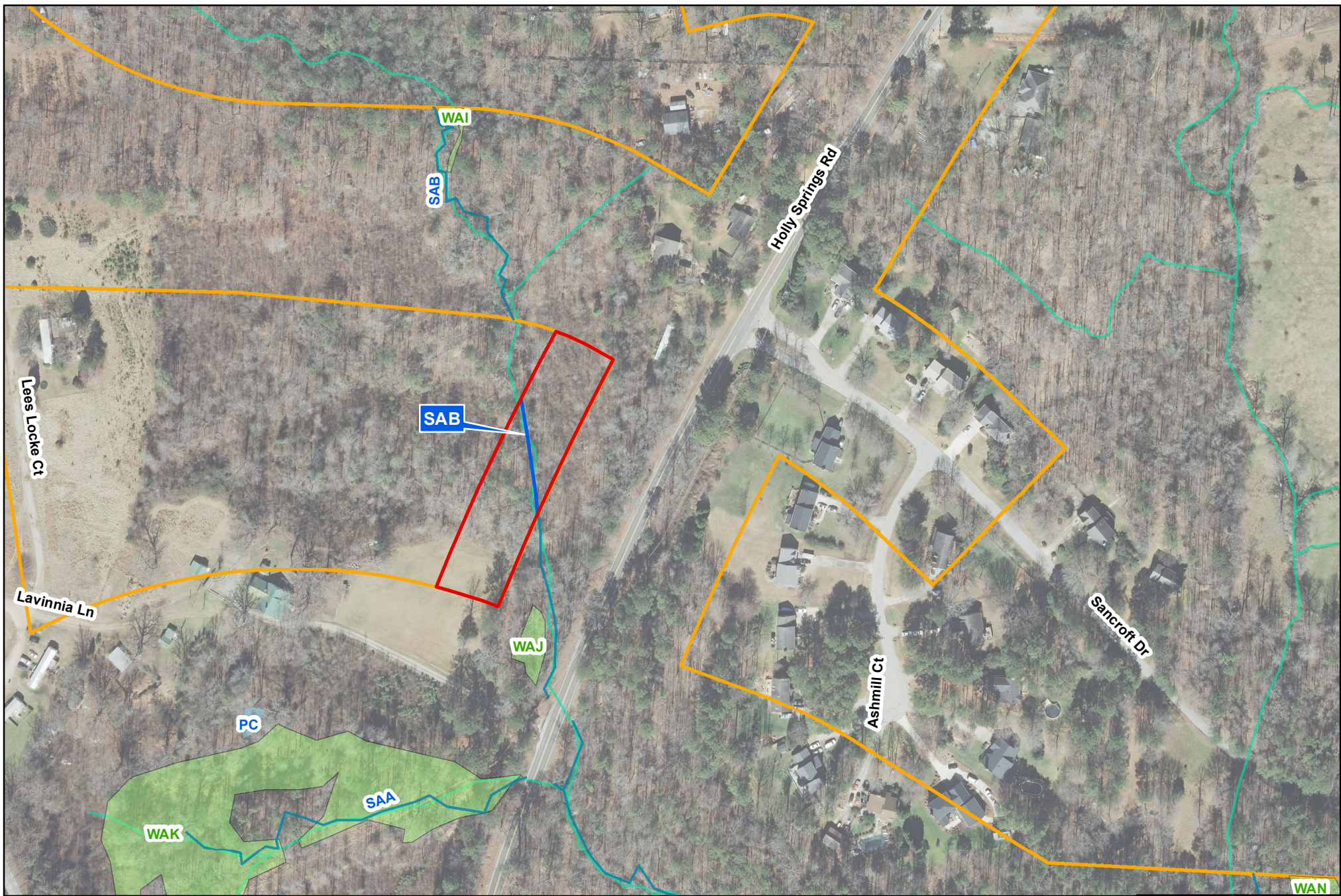
Additional Survey Limits measured 250' from -Y3- centerline



**Additional Limits  
Natural Resources  
Surveys**

Figure 2





**COMPLETE 540**  
TIP R-2721  
Wake County



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400 Feet

Additional Survey Limits measured 250' from -Y5- centerline

- |                          |                     |                         |
|--------------------------|---------------------|-------------------------|
| Additional Survey Limits | Additional Wetlands | Prior Verified Streams  |
| R-2721 Study Area        | Additional Streams  | Prior Verified Wetlands |
| Additional Ponds         | Wake County Streams | Prior Verified Ponds    |

**Additional Limits  
Natural Resources  
Surveys**

Figure 3





**COMPLETE 540**  
TIP R-2721  
Wake County



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400 Feet

Additional Survey Limits measured 150' from -Y5I- & -Y5J- centerline

- Additional Survey Limits
- R-2721 Study Area

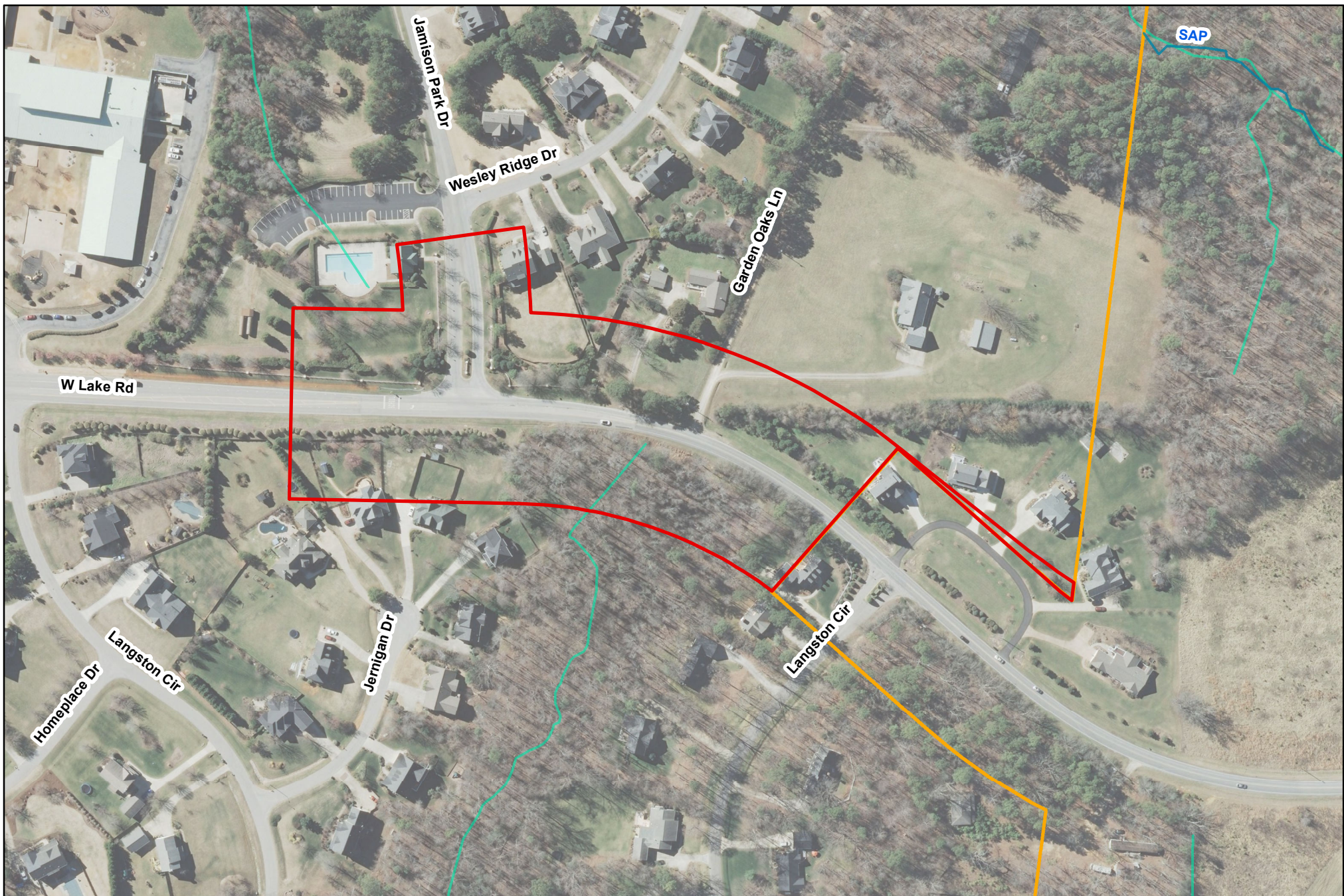
- Additional Wetlands
- Additional Streams
- Additional Ponds
- Wake County Streams

- Prior Verified Streams
- Prior Verified Wetlands
- Prior Verified Ponds

**Additional Limits  
Natural Resources  
Surveys**

Figure 4





**COMPLETE 540**  
TIP R-2721  
Wake County

PRELIMINARY : SUBJECT TO CHANGE



0 100 200 400  
Feet

Additional Survey Limits measured 150' from -Y7- centerline

- Additional Survey Limits
- R-2721 Study Area

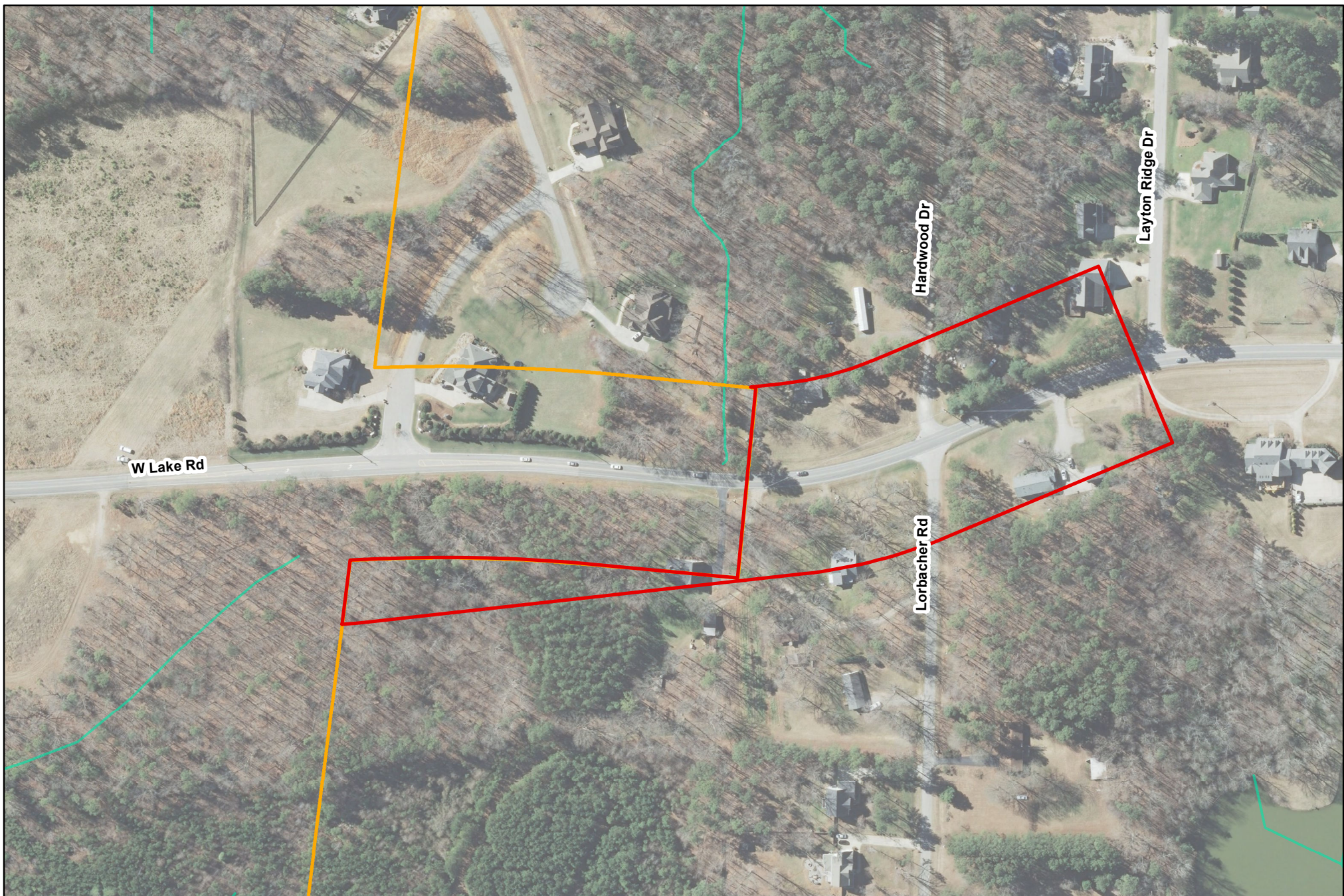
- Additional Wetlands
- Additional Streams
- Additional Ponds
- Wake County Streams

- Prior Verified Streams
- Prior Verified Wetlands
- Prior Verified Ponds

## Additional Limits Natural Resources Surveys

Figure 5





**COMPLETE 540**

TIP R-2721  
Wake County

PRELIMINARY : SUBJECT TO CHANGE



0 100 200 400  
Feet

Additional Survey Limits measured 150' from -Y7- centerline

- Additional Survey Limits
- R-2721 Study Area

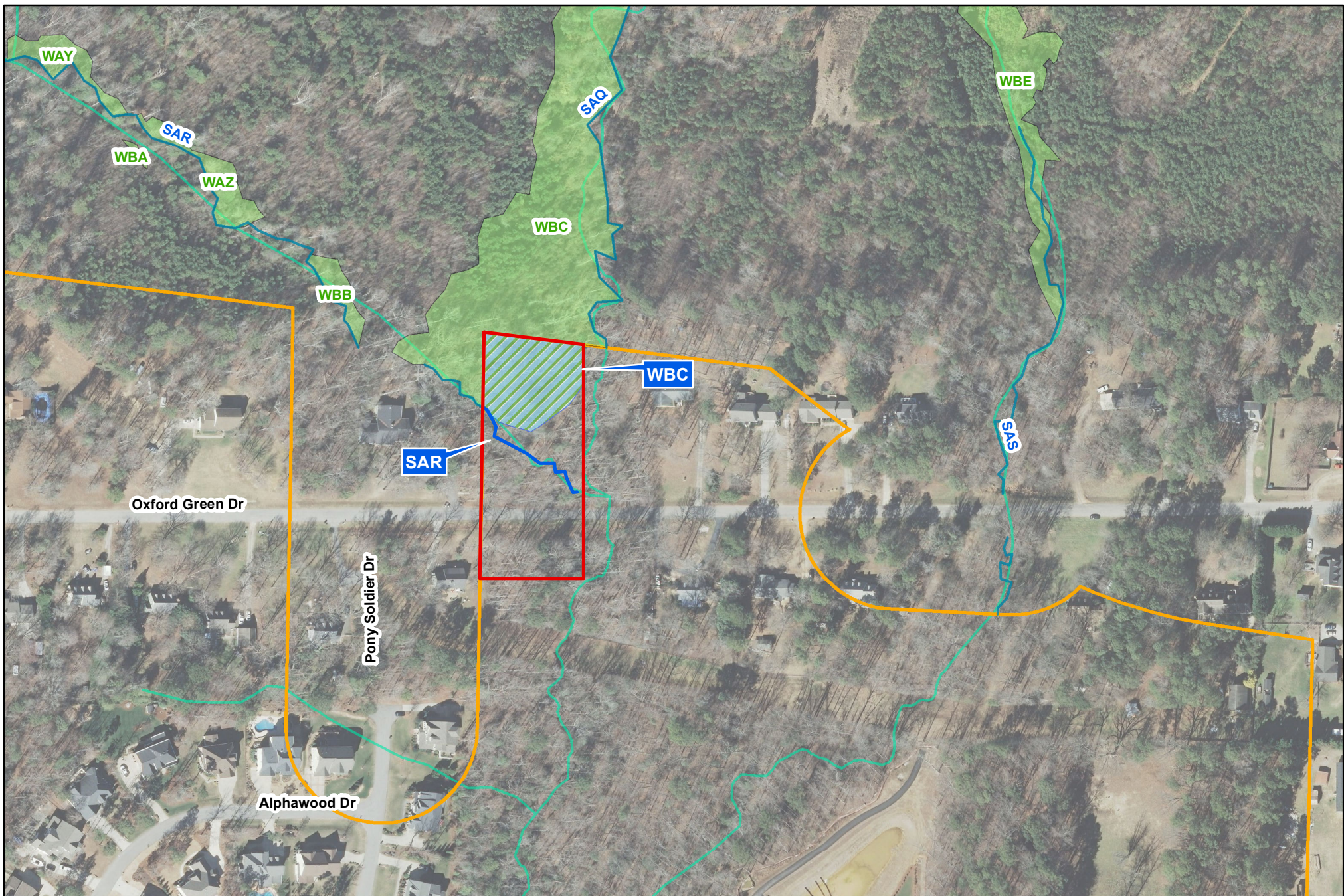
- Additional Wetlands
- Additional Streams
- Additional Ponds
- Wake County Streams

- Prior Verified Streams
- Prior Verified Wetlands
- Prior Verified Ponds

**Additional Limits  
Natural Resources  
Surveys**

Figure 6





**COMPLETE 540**  
TIP R-2721  
Wake County



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400 Feet

Additional Survey Limits measured 100' from -Y8B- centerline

- Additional Survey Limits
- R-2721 Study Area

- Additional Wetlands
- Additional Streams
- Additional Ponds
- Wake County Streams

- Prior Verified Streams
- Prior Verified Wetlands
- Prior Verified Ponds

**Additional Limits  
Natural Resources  
Surveys**

Figure 7





**COMPLETE 540**

TIP R-2721  
Wake County



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400  
Feet

Additional Survey Limits measured 100' from -Y10B- centerline

- Additional Survey Limits
- R-2721 Study Area

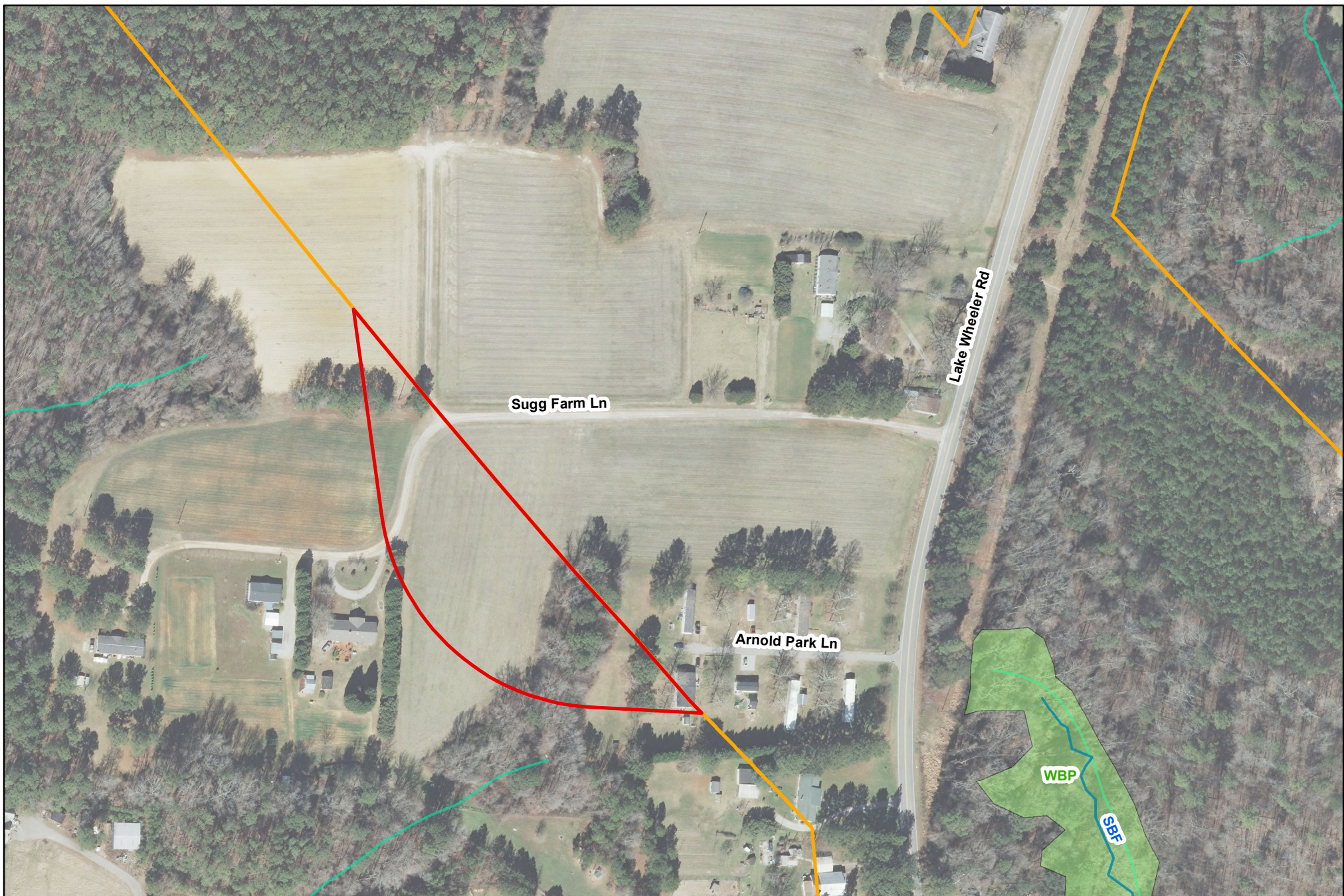
- Additional Wetlands
- Additional Streams
- Additional Ponds
- Wake County Streams

- Prior Verified Streams
- Prior Verified Wetlands
- Prior Verified Ponds

**Additional Limits  
Natural Resources  
Surveys**

Figure 8





**COMPLETE 540**  
TIP R-2721  
Wake County



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400  
Feet

Additional Survey Limits measured 100' from -Y12B- centerline

- Additional Survey Limits
- R-2721 Study Area

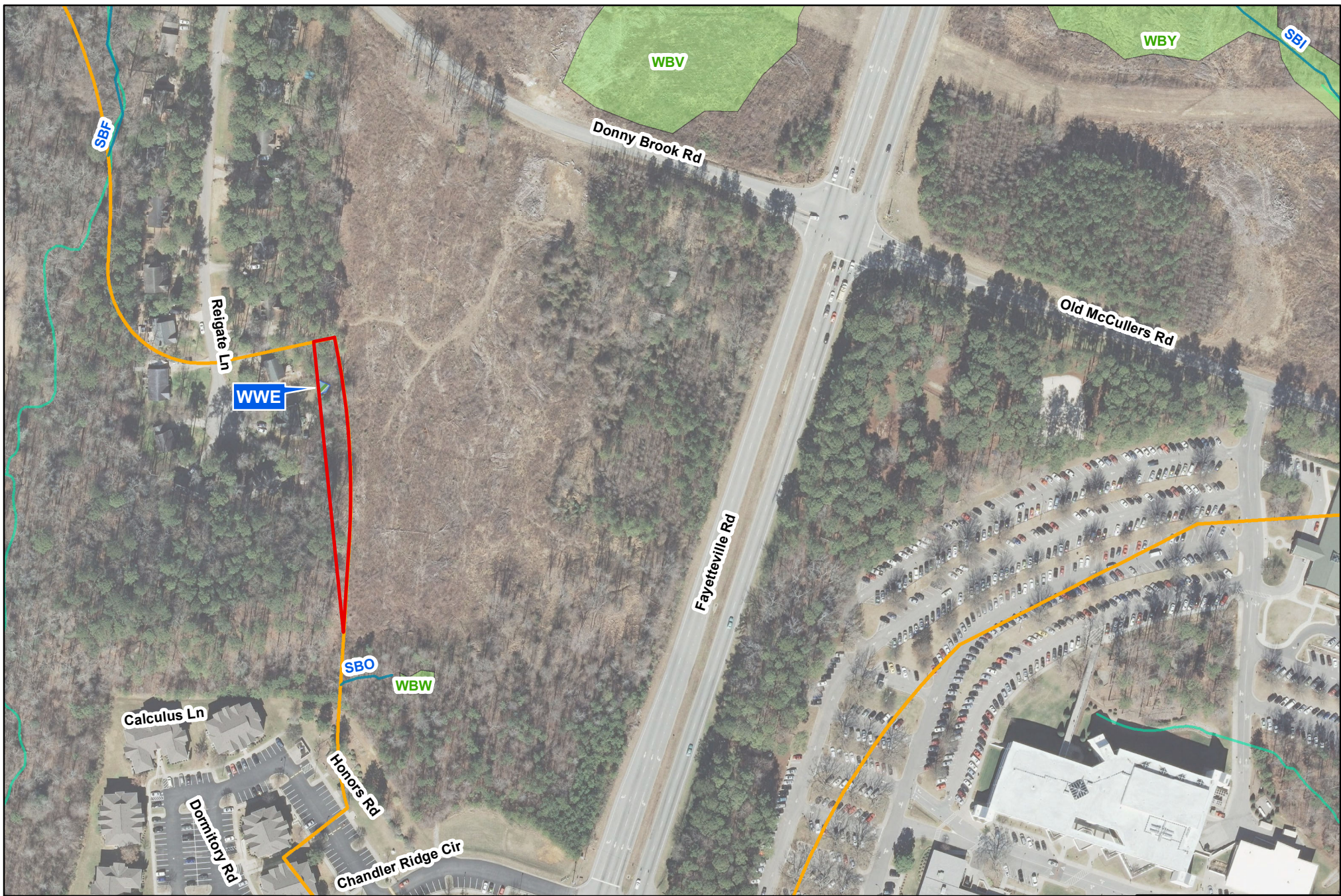
- Additional Wetlands
- Additional Streams
- Additional Ponds
- Wake County Streams

- Prior Verified Streams
- Prior Verified Wetlands
- Prior Verified Ponds

**Additional Limits  
Natural Resources  
Surveys**

Figure 9





**COMPLETE 540**  
TIP R-2721  
Wake County



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400 Feet

Additional Survey Limits measured 150' from -Y13A- centerline

- Additional Survey Limits
- R-2721 Study Area

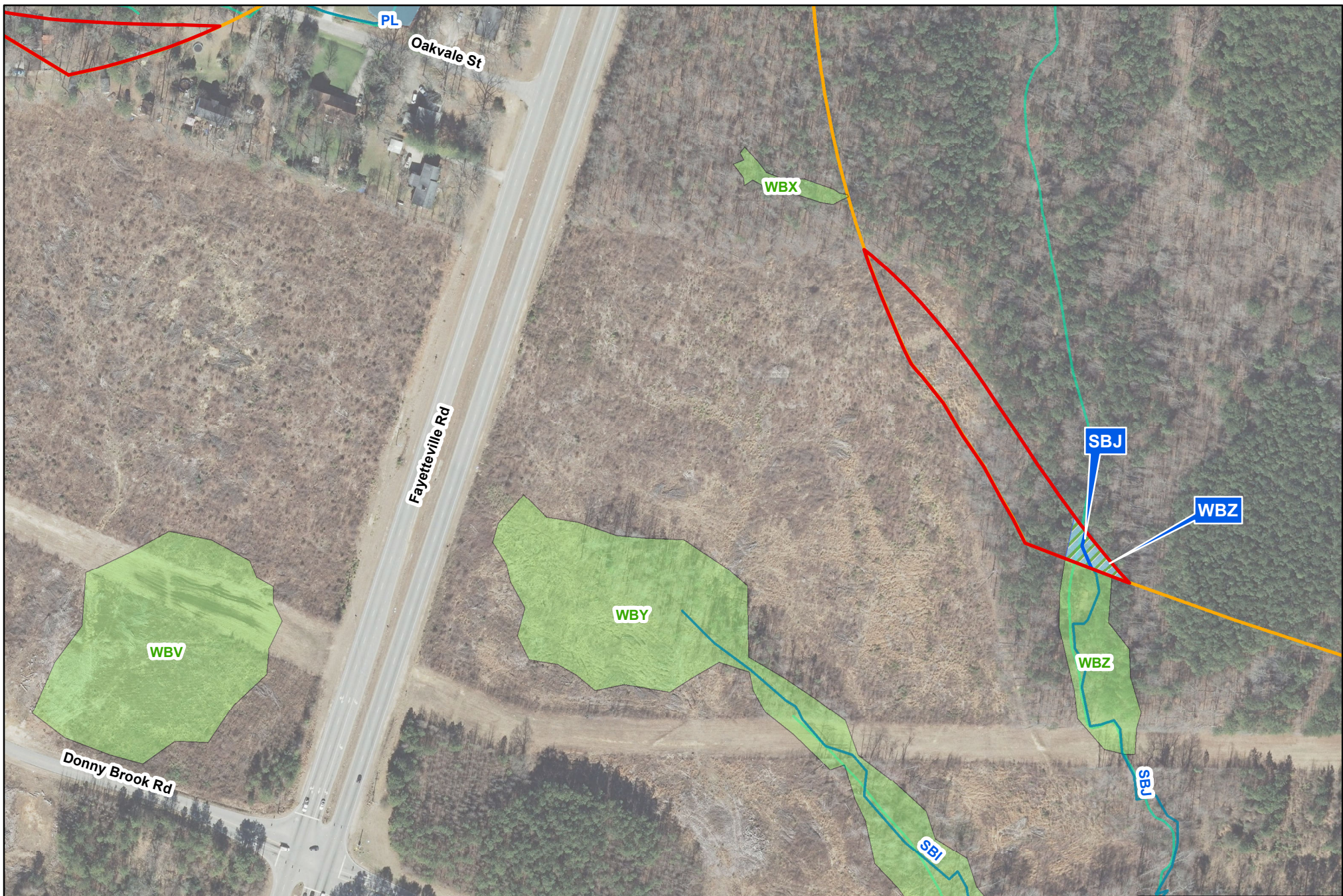
- Additional Wetlands
- Additional Streams
- Additional Ponds
- Wake County Streams

- Prior Verified Streams
- Prior Verified Wetlands
- Prior Verified Ponds

**Additional Limits  
Natural Resources  
Surveys**

Figure 10





**COMPLETE 540**  
TIP R-2721  
Wake County



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400 Feet

Additional Survey Limits measured 150' from -Y13RPA- centerline

- Additional Survey Limits
- R-2721 Study Area

- Additional Wetlands
- Additional Streams
- Additional Ponds
- Wake County Streams

- Prior Verified Streams
- Prior Verified Wetlands
- Prior Verified Ponds

**Additional Limits  
Natural Resources  
Surveys**

Figure 11





**COMPLETE 540**  
TIP R-2721  
Wake County



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400  
Feet

Additional Survey Limits measured 100' from -Y13B- centerline

- Additional Survey Limits
- R-2721 Study Area

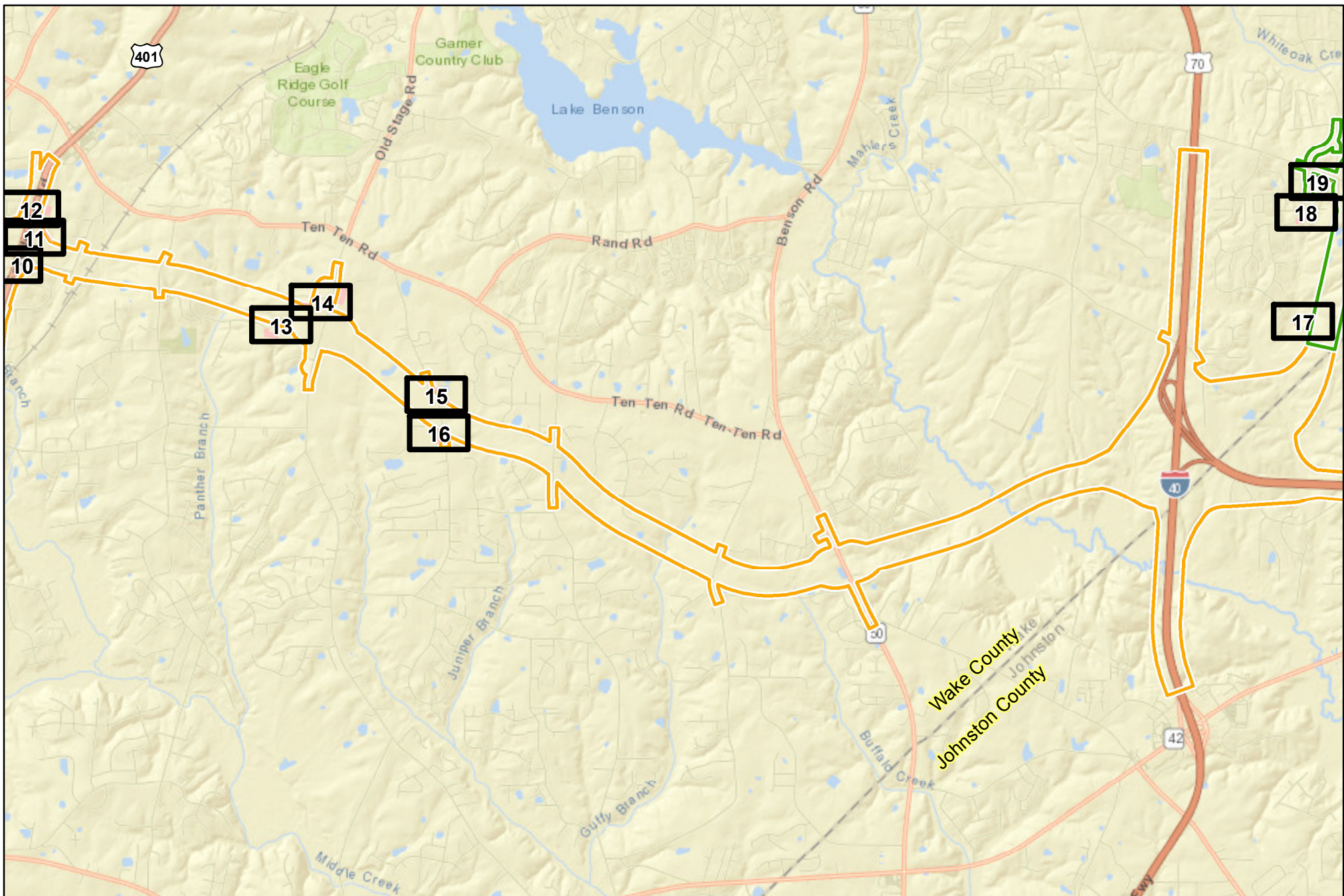
- Additional Wetlands
- Additional Streams
- Additional Ponds
- Wake County Streams

- Prior Verified Streams
- Prior Verified Wetlands
- Prior Verified Ponds

**Additional Limits  
Natural Resources  
Surveys**

Figure 12





**COMPLETE 540**

TIP R-2828

Wake and Johnston Counties



PRELIMINARY : SUBJECT TO CHANGE

NOT TO SCALE



Figure Borders



Additional Survey Limits



Orange Corridor

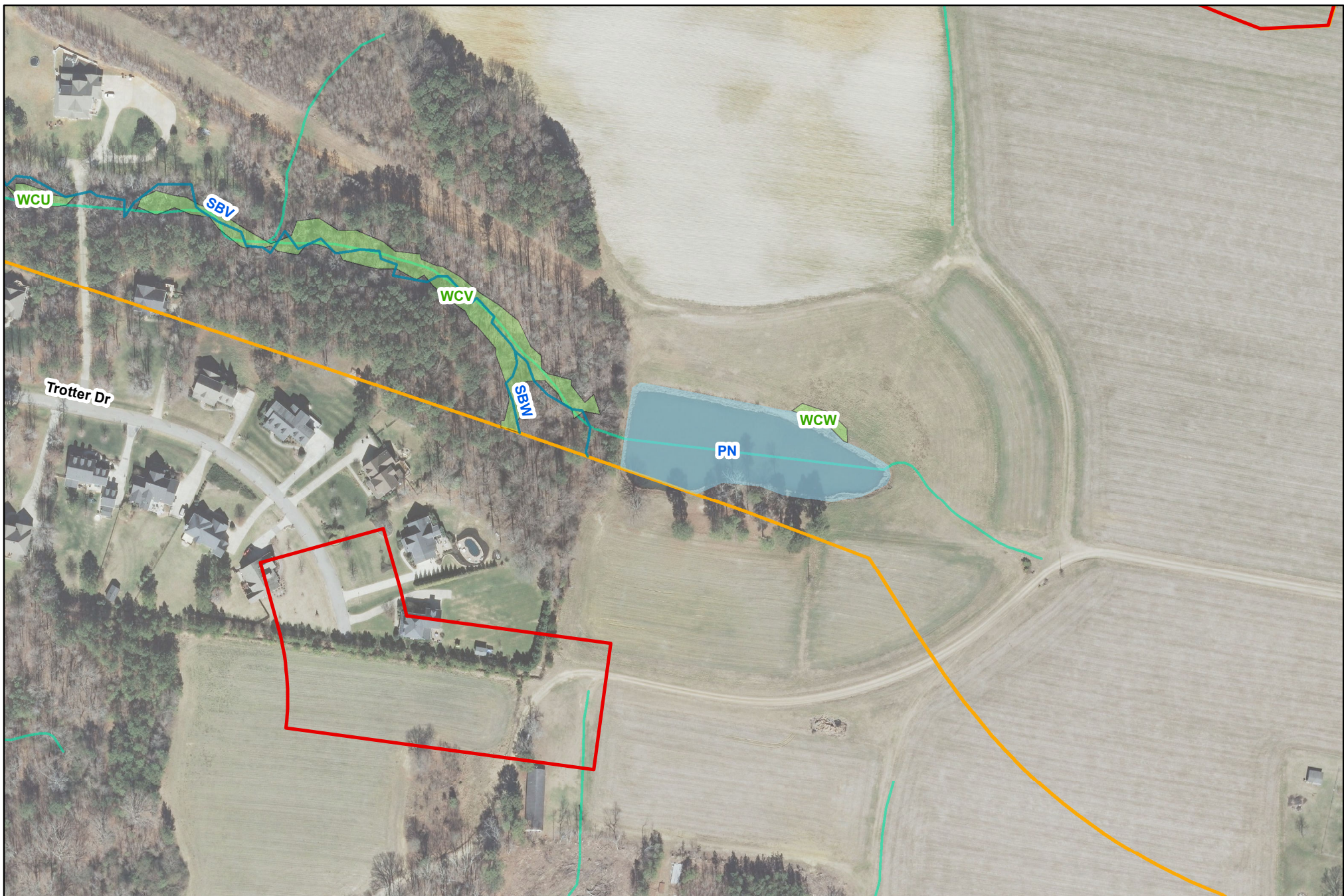


Green Corridor

**Additional Limits Natural Resources Surveys**

**R-2828 Figure Index**





**COMPLETE 540**

TIP R-2828  
Wake & Johnston Counties



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400 Feet

Additional Survey Limits measured 100' from -Y17H- & -Y17I- centerline

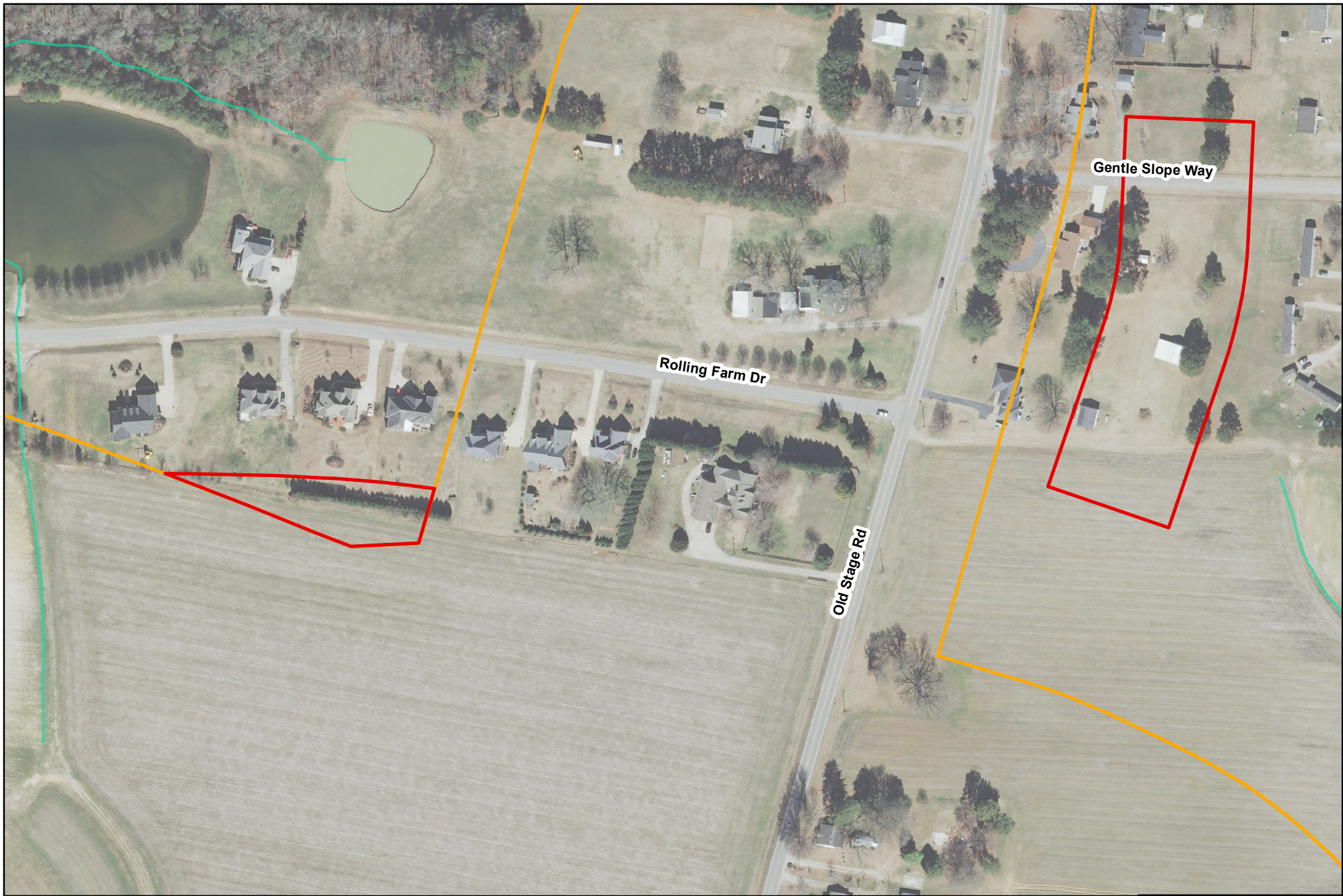
- Additional Survey Limits
- R-2828 Study Area

- Additional Wetlands
- Additional Streams
- Additional Ponds
- Wake County Streams
- Prior Verified Streams
- Prior Verified Wetlands
- Prior Verified Ponds

**Additional Limits  
Natural Resources  
Surveys**

Figure 13





**COMPLETE 540**

**TIP R-2828**  
Wake & Johnston Counties



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400 Feet

Additional Survey Limits measured 100' from -Y17E- centerline



Additional Survey Limits



R-2828 Study Area



Additional Wetlands



Additional Streams



Additional Ponds



Wake County Streams



Prior Verified Streams



Prior Verified Wetlands



Prior Verified Ponds

**Additional Limits  
Natural Resources  
Surveys**

**Figure 14**





**COMPLETE 540**

TIP R-2828  
Wake & Johnston Counties



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400 Feet

Additional Survey Limits measured 100' from -Y18A- centerline

- Additional Survey Limits
- R-2828 Study Area

- Additional Wetlands
- Additional Streams
- Additional Ponds
- Wake County Streams

- Prior Verified Streams
- Prior Verified Wetlands
- Prior Verified Ponds

**Additional Limits  
Natural Resources  
Surveys**

Figure 15

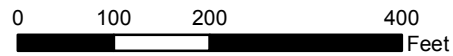




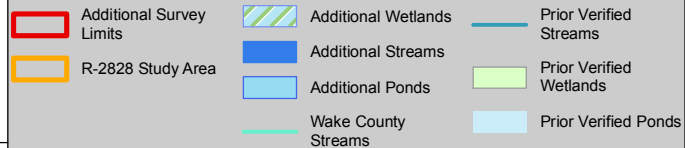
**COMPLETE 540**  
**TIP R-2828**  
Wake & Johnston Counties



PRELIMINARY : SUBJECT TO CHANGE



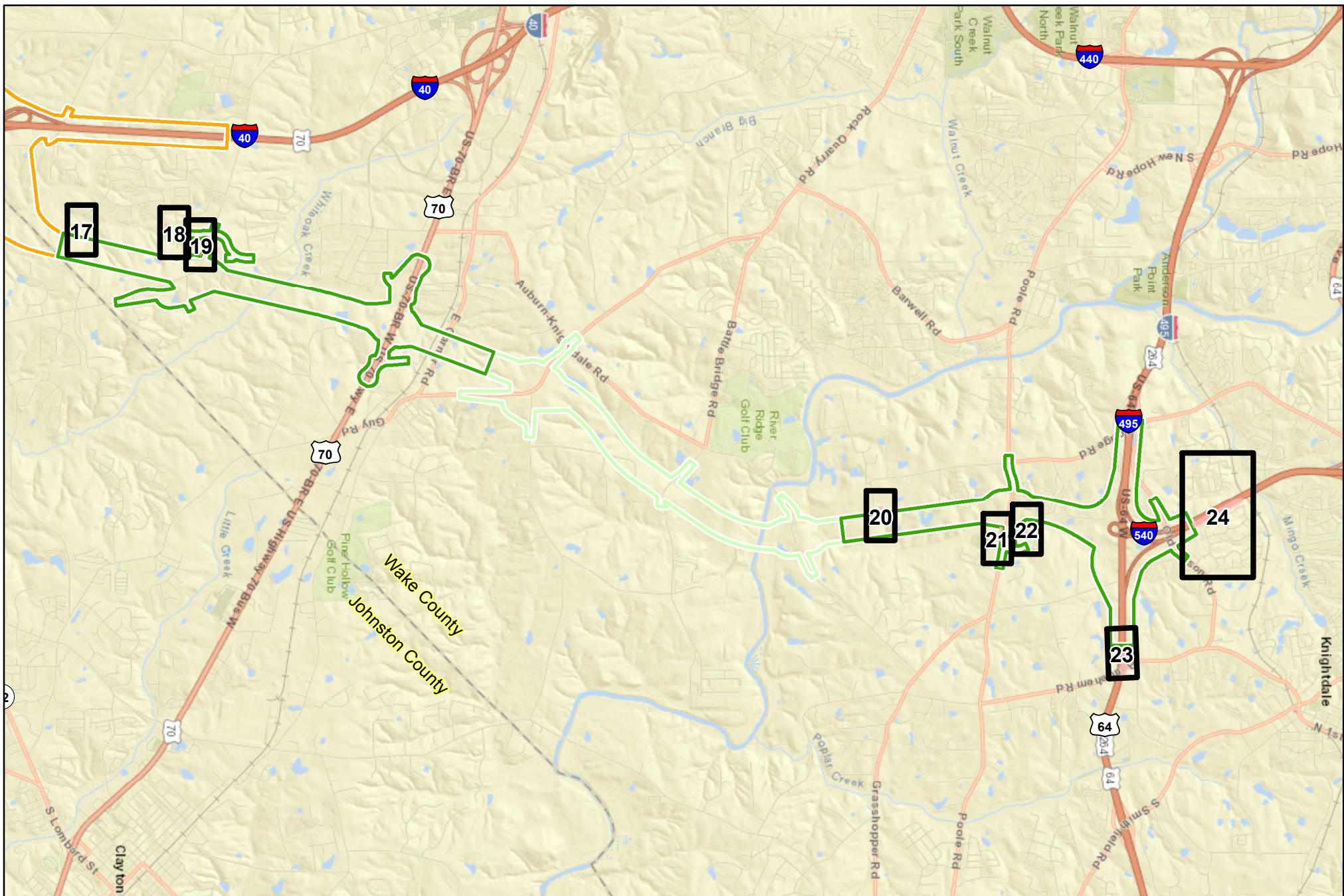
Additional Survey Limits measured 300' from -Y18- centerline



**Additional Limits  
Natural Resources  
Surveys**

Figure 16





**COMPLETE 540**  
TIP R-2829  
Wake County

PRELIMINARY : SUBJECT TO CHANGE



NOT TO SCALE



Figure Borders



Additional Survey Limits



Orange Corridor



Green Corridor



Mint Corridor

**Additional Limits Natural Resources Surveys**

**R-2829 Figure Index**





**COMPLETE 540**  
TIP R-2829  
Wake County



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400 Feet

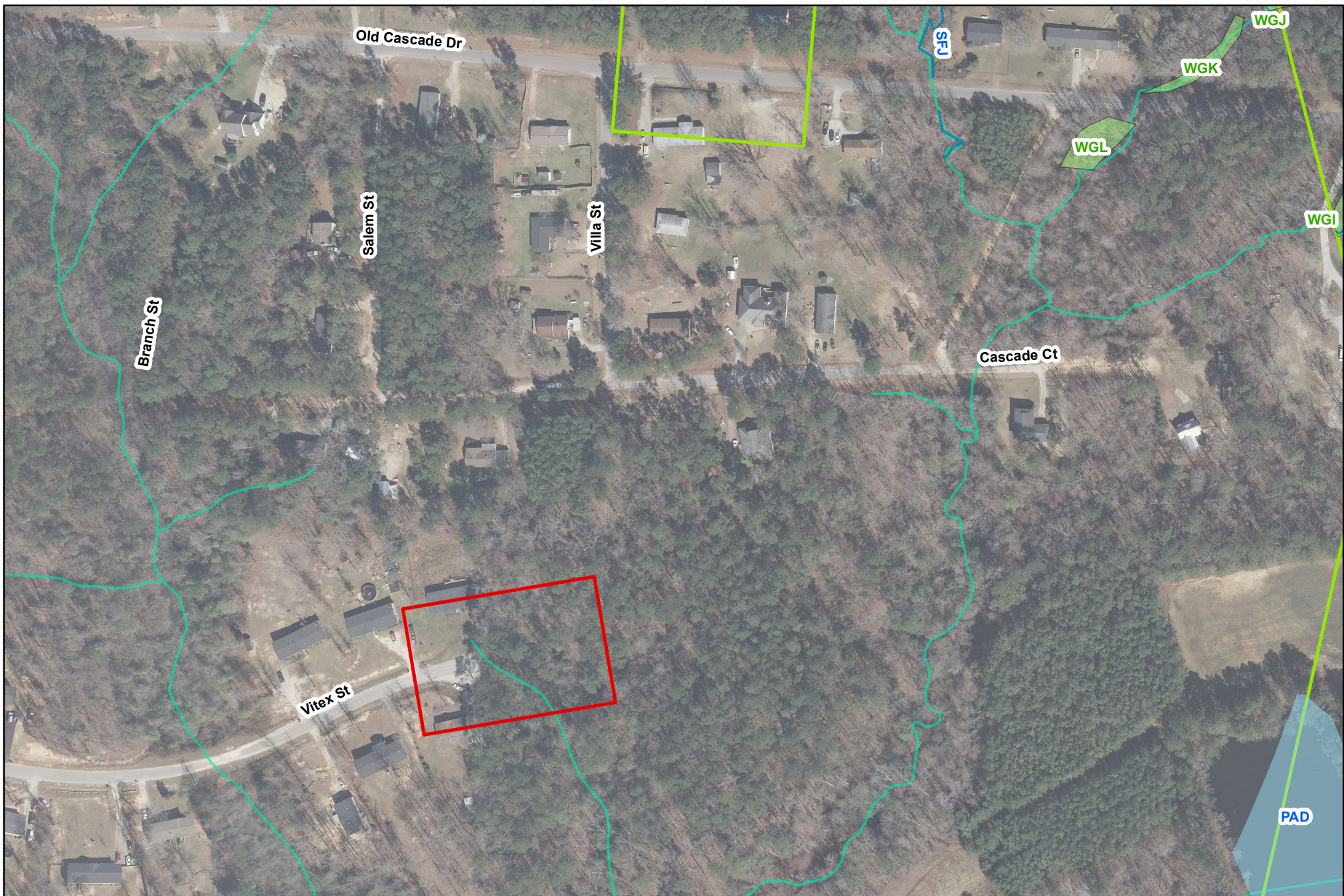
Additional Survey Limits measured 100' from -Y22C- centerline

Additional Survey Limits	Additional Wetlands	Prior Verified Streams
R-2829 Study Area	Additional Streams	Prior Verified Wetlands
	Additional Ponds	Prior Verified Ponds
	Wake County Streams	

**Additional Limits  
Natural Resources  
Surveys**

Figure 17





**COMPLETE 540**  
TIP R-2829  
Wake County



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400 Feet

Additional Survey Limits measured 100' from -Y23E- centerline

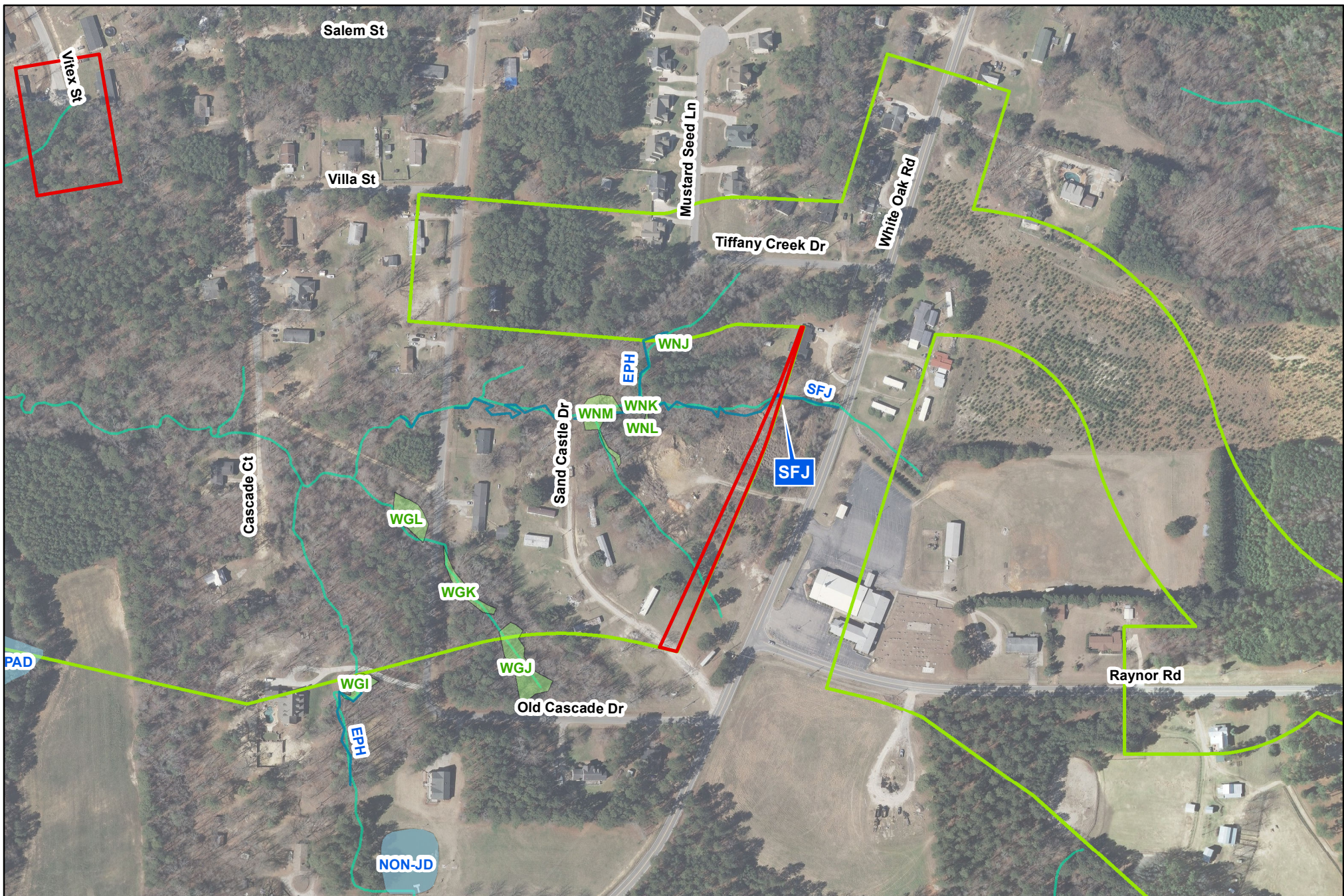
- Additional Survey Limits
- R-2829 Study Area

- |  |  |   |
|--|--|---|
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| <span style="background-color: #add8e6; border: 1px solid black; padding: 2px;"> </span> Additional Ponds      | <span style="background-color: #90ee90; border: 1px solid black; padding: 2px;"> </span> Prior Verified Wetlands | <span style="background-color: #add8e6; border: 1px solid black; padding: 2px;"> </span> Prior Verified Ponds   |
| <span style="border-bottom: 2px solid green; width: 20px; display: inline-block;"> </span> Wake County Streams |  |   |

**Additional Limits  
Natural Resources  
Surveys**

Figure 18





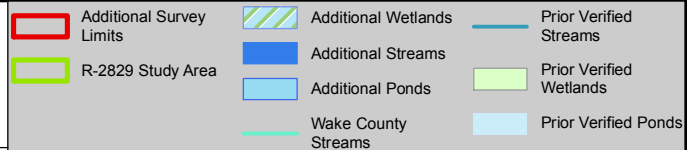




PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400  
Feet

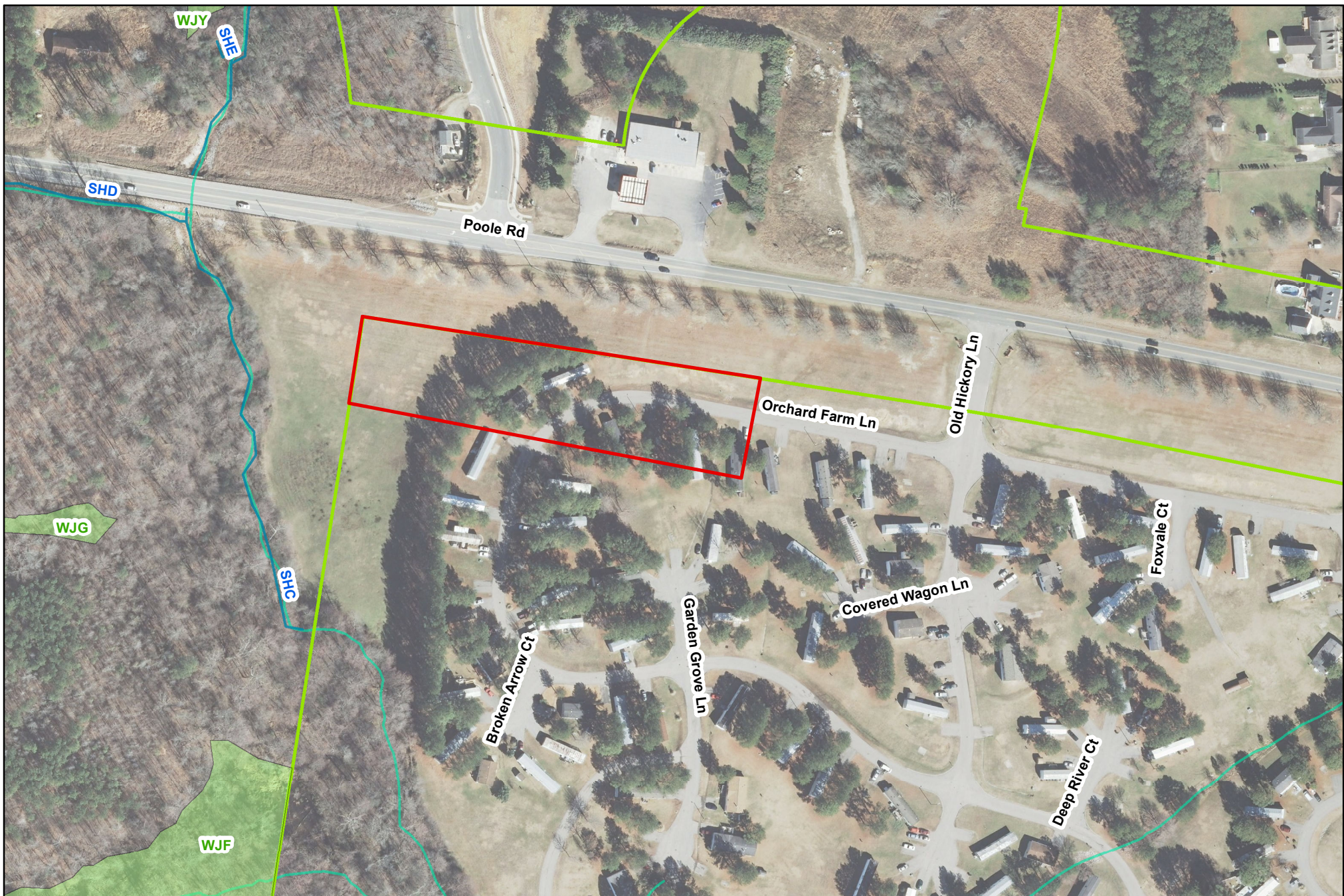
Additional Survey Limits measured 100' from -Y29B- centerline



**Additional Limits  
Natural Resources  
Surveys**

Figure 20





**COMPLETE 540**  
TIP R-2829  
Wake County



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400  
Feet

Additional Survey Limits measured 100' from -Y30A- centerline

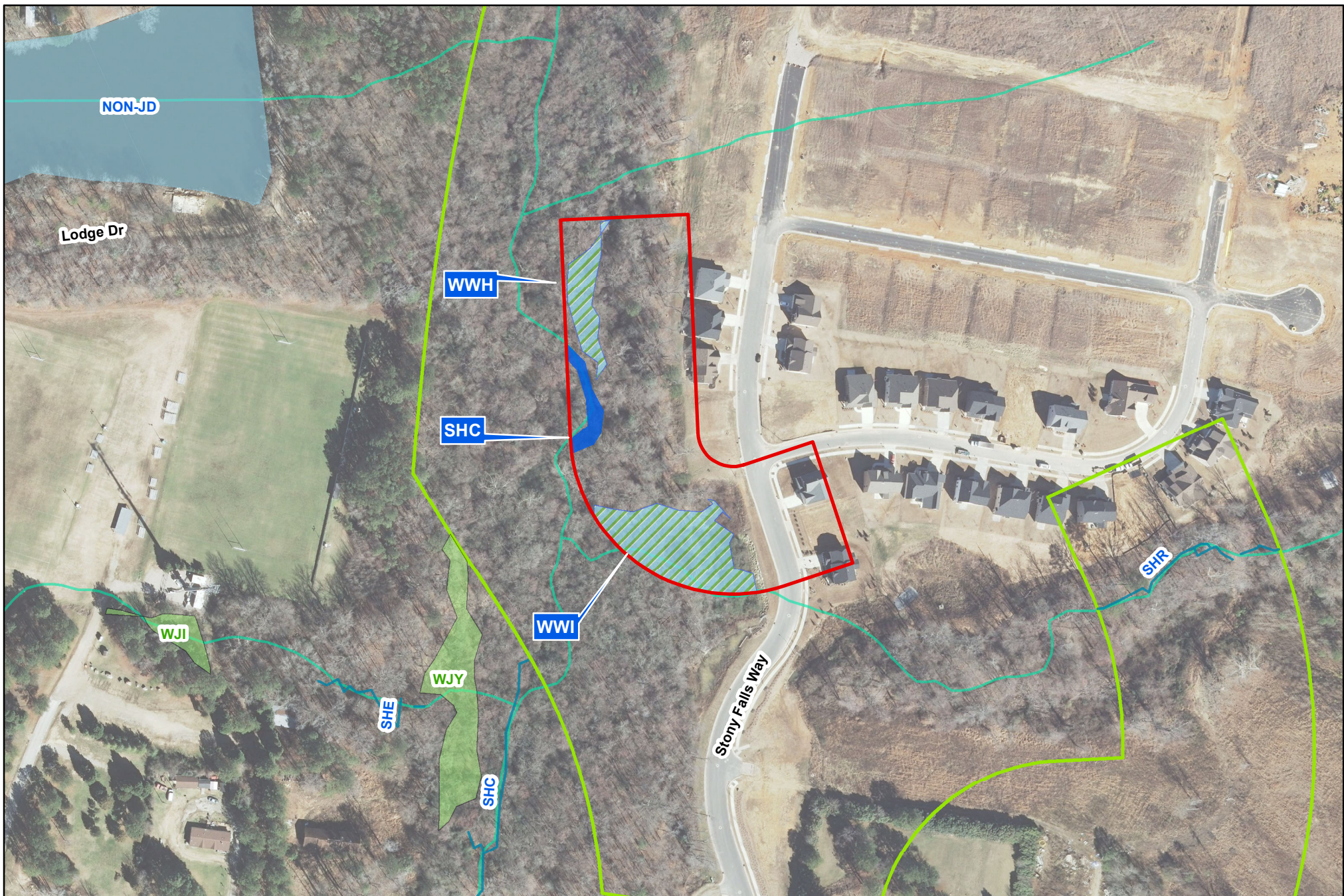
- Additional Survey Limits
- R-2829 Study Area

- Additional Wetlands
- Additional Streams
- Additional Ponds
- Wake County Streams
- Prior Verified Streams
- Prior Verified Wetlands
- Prior Verified Ponds

**Additional Limits  
Natural Resources  
Surveys**

Figure 21





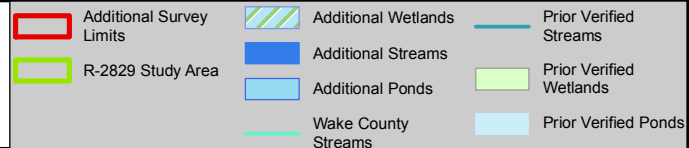
**COMPLETE 540**  
TIP R-2829  
Wake County



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400  
Feet

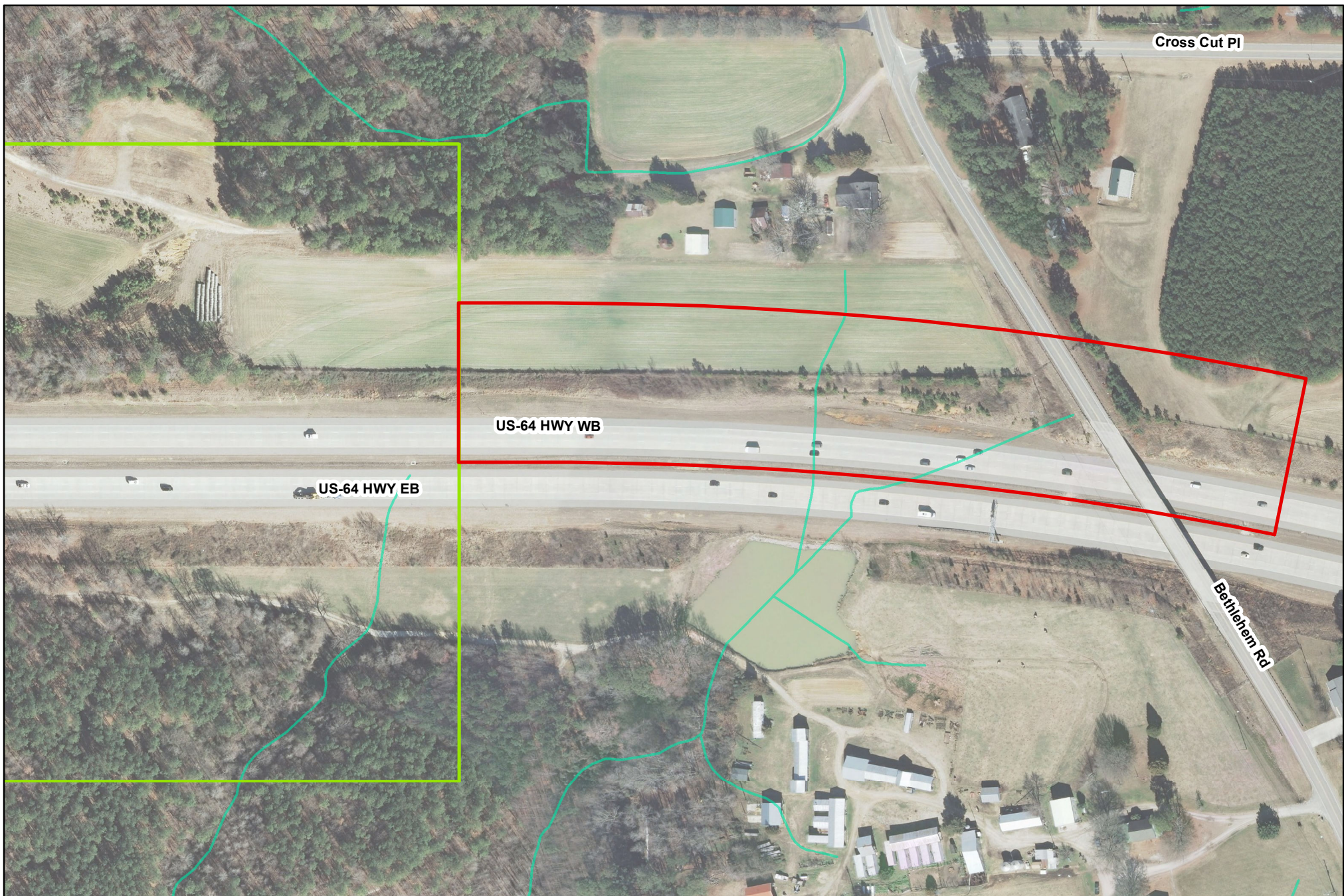
Additional Survey Limits measured 100' from -Y30B- centerline



**Additional Limits  
Natural Resources  
Surveys**

Figure 22





**COMPLETE 540**

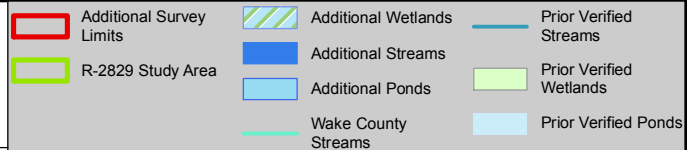
TIP R-2829  
Wake County



PRELIMINARY : SUBJECT TO CHANGE

0 100 200 400 Feet

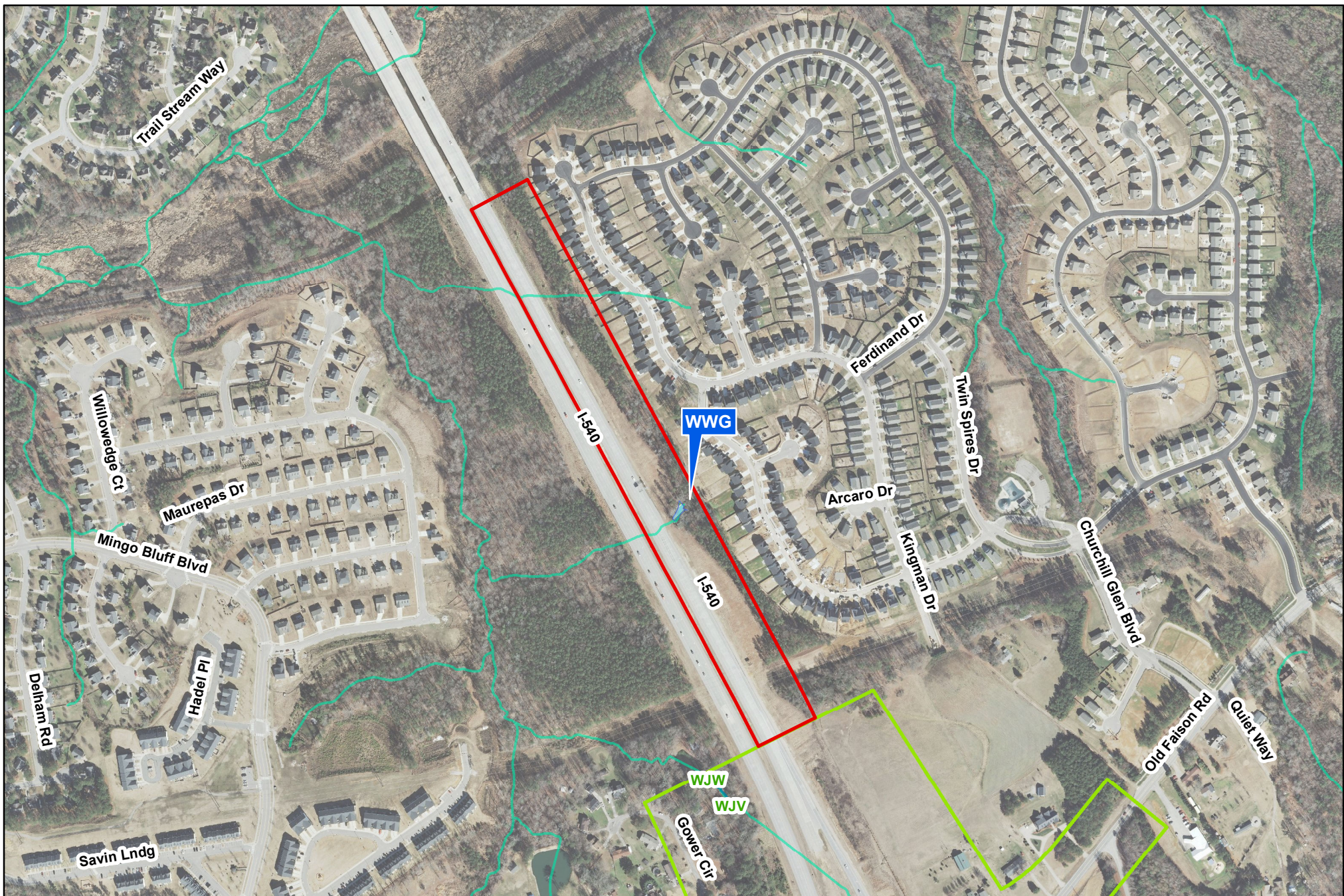
Additional Survey Limits measured 250' from -Y31- centerline



**Additional Limits  
Natural Resources  
Surveys**

Figure 23

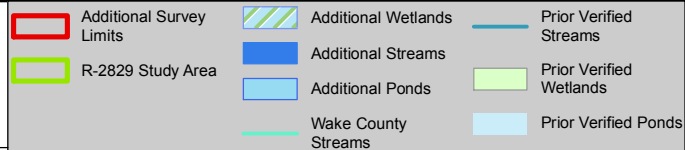




PRELIMINARY : SUBJECT TO CHANGE

0 250 500 1,000  
 Feet

Additional Survey Limits measured 250' from -L- centerline



## Additional Limits Natural Resources Surveys

Figure 24



# NC DWQ Stream Identification Form Version 4.11

- Big Branch

Date: 8/14/17	Project/Site: C540	Latitude: 35.68886
Evaluator: J. Tisdale / J. Garvey	County: WAKE	Longitude: -78.8518
Total Points: Stream is at least intermittent if $\geq 19$ or perennial if $\geq 30$ 34.5	Stream Determination (circle one) Ephemeral Intermittent <u>Perennial</u>	Other e.g. Quad Name: APEX

A. Geomorphology (Subtotal = 19)	Absent	Weak	Moderate	Strong
1 <sup>a</sup> . Continuity of channel bed and bank	0	1	2	3
2. Sinuosity of channel along thalweg	0	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3
4. Particle size of stream substrate	0	1	2	3
5. Active/relict floodplain	0	1	2	3
6. Depositional bars or benches	0	1	2	3
7. Recent alluvial deposits	0	1	2	3
8. Headcuts	0	1	2	3
9. Grade control	0	0.5	1	1.5
10. Natural valley	0	0.5	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

<sup>a</sup> artificial ditches are not rated; see discussions in manual

## B. Hydrology (Subtotal = 6.5)

12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

## C. Biology (Subtotal = 9)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	0	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

<sup>a</sup> perennial streams may also be identified using other methods. See p. 35 of manual.

## Notes:

## Sketch:

Bank height: 1-2'  
 Bankfull width: 2-8'  
 Water depth: 2"-10"  
 Substrate: sand, gravel, silt  
 Velocity: fast, moderate, slow  
 Clarity: clean, turbid, slightly turbid

NC DWQ Stream Identification Form Version 4.11

SO-Middle Creek

Date: 8/14/17	Project/Site: C540	Latitude: 35.68011
Evaluator: S. Easterly, T. Carter	County: Wake	Longitude: -78.824
Total Points: Stream is at least intermittent if $\geq 19$ or perennial if $\geq 30^*$ 34	Stream Determination (circle one) Ephemeral Intermittent <u>Perennial</u>	Other e.g. Quad Name: Apex

A. Geomorphology (Subtotal = 15.5)

	Absent	Weak	Moderate	Strong
1 <sup>a</sup> Continuity of channel bed and bank	0	1	2	(3)
2. Sinuosity of channel along thalweg	0	1	(2)	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	(2)	3
4. Particle size of stream substrate	0	1	(2)	3
5. Active/relict floodplain	0	(1)	2	3
6. Depositional bars or benches	0	1	(2)	3
7. Recent alluvial deposits	(0)	1	2	3
8. Headcuts	(0)	1	2	3
9. Grade control	(0)	0.5	1	1.5
10. Natural valley	0	(0.5)	1	1.5
11. Second or greater order channel	No = 0		Yes = (3)	

<sup>a</sup>artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 9.0)

12. Presence of Baseflow	0	1	2	(3)
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	(1.5)	1	0.5	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 9.5)

18. Fibrous roots in streambed	(3)	2	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macrobenthos (note diversity and abundance)	0	(1)	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	0	0.5	(1)	1.5
23. Crayfish	0	(0.5)	1	1.5
24. Amphibians	0	0.5	(1)	1.5
25. Algae	(0)	0.5	1	1.5
26. Wetland plants in streambed	NA FACW = 0.75; OBL = 1.5 Other = 0			

\*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

Bank height: 4  
 Bankfull width: 15-20  
 Water depth: 4"-18"  
 Substrate: sand, silt, gravel  
 Velocity: fast, moderate, slow  
 Clarity: clear, turbid, slightly turbid



NC DWQ Stream Identification Form Version 4.11

SE ext

Date: 8/14/17	Project/Site: C540	Latitude: 35.68996
Evaluator: J. Tisdale	County: WAKE	Longitude: -78.8415
Total Points: 28 Stream is at least intermittent if $\geq 19$ or perennial if $\geq 30$ *	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name: APEX

A. Geomorphology (Subtotal = 15)	Absent	Weak	Moderate	Strong
1 <sup>a</sup> Continuity of channel bed and bank	0	1	2	3
2. Sinuosity of channel along thalweg	0	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3
4. Particle size of stream substrate	0	1	2	3
5. Active/relict floodplain	0	1	2	3
6. Depositional bars or benches	0	1	2	3
7. Recent alluvial deposits	0	1	2	3
8. Headcuts	0	1	2	3
9. Grade control bedrock	0	0.5	1	1.5
10. Natural valley	0	0.5	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

\*artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 6.5)				
12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 10.5)				
18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	0	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

\*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

Bank height: 1' - 2'  
 Bankfull width: 2' - 5'  
 Water depth: 1" - 1'  
 Substrate: sand, silt, gravel, cobble, bedrock  
 Velocity: fast, moderate, slow  
 Clarity: clean, turbid, slightly turbid

\*point lake  
 downstream of  
 ramp.

NC DWQ Stream Identification Form Version 4.11

SAB from old SA to headcut

Date: 8/14/17	Project/Site: C540	Latitude: 35.67838
Evaluator: S. Easterly, T. Carter	County: Wake	Longitude: -78.7928
Total Points: Stream is at least intermittent if $\geq 19$ or perennial if $\geq 30^*$	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name: Apex

A. Geomorphology (Subtotal = 10)	Absent	Weak	Moderate	Strong
1 <sup>a</sup> Continuity of channel bed and bank	0	1	2	(3)
2. Sinuosity of channel along thalweg	0	1	(2)	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	(2)	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	(0)	1	2	3
6. Depositional bars or benches	0	(1)	2	3
7. Recent alluvial deposits	(0)	1	2	3
8. Headcuts	0	(1)	2	3
9. Grade control	(0)	0.5	1	1.5
10. Natural valley	(0)	0.5	1	1.5
11. Second or greater order channel	No = (0)		Yes = 3	

<sup>a</sup> artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 2.0)

12. Presence of Baseflow	(0)	1	2	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	(0)	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = (0)		Yes = 3	

C. Biology (Subtotal = 6)

18. Fibrous roots in streambed	(3)	2	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macroinvertebrates (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	(0)	0.5	1	1.5
26. Wetland plants in streambed	NA FACW = 0.75; OBL = 1.5 Other = 0			

\*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

Bank height: 2-3  
 Bankfull width: 4  
 Water depth: 0 - no water  
 Substrate: gravel, cobble, sand  
 Velocity: fast, moderate, slow  
 Clarity: clear, turbid, slightly turbid

From old study area to point 2 "headcut"

NA - no water  
 NA - no water  
 Scored high ephemeral due to lack of water. Would score at least intermittent if had water in it



NC DWQ Stream Identification Form Version 4.11

SAR

Date: 8/15/17	Project/Site: C540	Latitude: 35.67375
Evaluator: S. Kasterdy, T. Carter	County: Wake	Longitude: -78.7493
Total Points: Stream is at least intermittent if $\geq 19$ or perennial if $\geq 30$ * 23.5	Stream Determination (circle one) Ephemeral <u>Intermittent</u> Perennial	Other Lake e.g. Quad Name: Wheeler

A. Geomorphology (Subtotal = 12)

	Absent	Weak	Moderate	Strong
1 <sup>a</sup> Continuity of channel bed and bank	0	1	2	3
2. Sinuosity of channel along thalweg	0	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3
4. Particle size of stream substrate	0	1	2	3
5. Active/relict floodplain	0	1	2	3
6. Depositional bars or benches	0	1	2	3
7. Recent alluvial deposits	0	1	2	3
8. Headcuts	0	1	2	3
9. Grade control	0	0.5	1	1.5
10. Natural valley	0	0.5	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

<sup>a</sup> artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 5.5)

12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 6)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	0	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

\*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

Bank height: 2-4

Bankfull width: 8

Water depth: 0

Substrate: sand, gravel, cobble

Velocity: fast, moderate, slow NA

Clarity: clean, turbid, slightly turbid NA - No water

No water in channel at time of this evaluation

See previous form  
Stream appears to be at least intermittent



NC DWQ Stream Identification Form Version 4.11

SBJ

Date: 8/15/17	Project/Site: C540	Latitude: 35.65533
Evaluator: S. Easterly, T. Carter	County: Wake	Longitude: -78.7019
Total Points: Stream is at least intermittent if $\geq 19$ or perennial if $\geq 30$ * 33	Stream Determination (circle one) Ephemeral Intermittent <u>Perennial</u>	Other Lake e.g. Quad Name: wheeler

A. Geomorphology (Subtotal = 16.5)

	Absent	Weak	Moderate	Strong
1 <sup>a</sup> . Continuity of channel bed and bank	0	1	2	3
2. Sinuosity of channel along thalweg	0	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3
4. Particle size of stream substrate	0	1	2	3
5. Active/relict floodplain	0	1	2	3
6. Depositional bars or benches	0	1	2	3
7. Recent alluvial deposits	0	1	2	3
8. Headcuts	0	1	2	3
9. Grade control	0	0.5	1	1.5
10. Natural valley	0	0.5	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

<sup>a</sup> artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 8.5)

12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 4)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	0	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

\*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

Bank height: 1-3  
 Bankfull width: 4-6  
 Water depth: 4" - 18"  
 Substrate: sand, gravel, silt  
 Velocity: fast, moderate, slow  
 Clarity: clear, turbid, slightly turbid



NC DWQ Stream Identification Form Version 4.11

SFJ

Date: 8/16/17	Project/Site: C 540	Latitude: 35.661427
Evaluator: V. Miller, J. Garvey	County: Wake	Longitude: -78.54885
Total Points: Stream is at least intermittent if $\geq 19$ or perennial if $\geq 30$ 25.5	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other Garner e.g. Quad Name:

A. Geomorphology (Subtotal = 13)

	Absent	Weak	Moderate	Strong
1 <sup>a</sup> Continuity of channel bed and bank	0	1	2	(3)
2. Sinuosity of channel along thalweg	0	1	(2)	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	(1)	2	3
4. Particle size of stream substrate	0	1	(2)	3
5. Active/relict floodplain	(0)	1	2	3
6. Depositional bars or benches	0	1	(2)	3
7. Recent alluvial deposits	0	1	(2)	3
8. Headcuts	(0)	1	2	3
9. Grade control	0	(0.5)	1	1.5
10. Natural valley	0	(0.5)	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

<sup>a</sup> artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 6.5)

12. Presence of Baseflow	0	(1)	2	3
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	(1.5)	1	0.5	0
15. Sediment on plants or debris	0	(0.5)	1	1.5
16. Organic debris lines or piles	0	(0.5)	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 6)

18. Fibrous roots in streambed	(3)	2	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macroinvertebrates (note diversity and abundance)	(0)	1	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	(0)	0.5	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	(0)	0.5	1	1.5
25. Algae	(0)	0.5	1	1.5
26. Wetland plants in streambed	NA FACW = 0.75; OBL = 1.5 Other = 0			

\*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

Bank height: 8-10'  
Bankfull width: 5-7'  
Water depth: 0-2"  
Substrate: sand, gravel  
Velocity: fast, moderate, slow  
Clarity: clear, turbid, slightly turbid



NC DWQ Stream Identification Form Version 4.11

SHC

Date: 8/16/17	Project/Site: C540	Latitude: 35.75666
Evaluator: VM, JG	County: Wake	Longitude: -78.5079
Total Points: Stream is at least intermittent if $\geq 19$ or perennial if $\geq 30^*$ 40.5	Stream Determination (circle one) Ephemeral Intermittent <u>Perennial</u>	Other e.g. Quad Name: Raleigh East

A. Geomorphology (Subtotal = 21)

	Absent	Weak	Moderate	Strong
1 <sup>a</sup> . Continuity of channel bed and bank	0	1	2	3
2. Sinuosity of channel along thalweg	0	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3
4. Particle size of stream substrate	0	1	2	3
5. Active/relict floodplain	0	1	2	3
6. Depositional bars or benches	0	1	2	3
7. Recent alluvial deposits	0	1	2	3
8. Headcuts	0	1	2	3
9. Grade control	0	0.5	1	1.5
10. Natural valley	0	0.5	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

<sup>a</sup> artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 10)

12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 9.5)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macrobenthos (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks corbicula	0	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	1	1.5
26. Wetland plants in streambed N/A	FACW = 0.75; OBL = 1.5 Other = 0			

\*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

Bank height: 6 ft  
 Bankfull width: 8-10 ft  
 Water depth: 2-6"  
 Substrate: sand, small gravel  
 Velocity: fast, moderate, slow  
 Clarity: clean, turbid, slightly turbid



NC DWQ Stream Identification Form Version 4.11

SSF

Date: 8/14/17	Project/Site: C540	Latitude: 35.68776
Evaluator: JT, SE, JG	County: Wake	Longitude: -78.8489
Total Points: Stream is at least intermittent if $\geq 19$ or perennial if $\geq 30^*$	Stream Determination (circle one) Ephemeral Intermittent <u>Perennial</u>	Other e.g. Quad Name: Apex

30.5

A. Geomorphology (Subtotal = 15.5)

	Absent	Weak	Moderate	Strong
1 <sup>a</sup> Continuity of channel bed and bank	0	1	2	(3)
2. Sinuosity of channel along thalweg	0	1	2	(3)
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	(0)	1	2	3
4. Particle size of stream substrate	0	(1)	2	3
5. Active/relict floodplain	0	(1)	2	3
6. Depositional bars or benches	0	(1)	2	3
7. Recent alluvial deposits	0	1	(2)	3
8. Headcuts	(0)	1	2	3
9. Grade control	(0)	0.5	1	1.5
10. Natural valley	0	0.5	1	(1.5)
11. Second or greater order channel	No = 0		Yes = (3)	

<sup>a</sup> artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 8)

12. Presence of Baseflow	0	1	2	(3)
13. Iron oxidizing bacteria	(0)	1	2	3
14. Leaf litter	1.5	(1)	0.5	0
15. Sediment on plants or debris	(0)	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	(1)	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = (3)	

C. Biology (Subtotal = 7)

18. Fibrous roots in streambed	3	(2)	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	(1)	2	3
21. Aquatic Mollusks	(0)	1	2	3
22. Fish	0	(0.5)	1	1.5
23. Crayfish	(0)	0.5	1	1.5
24. Amphibians	0	(0.5)	1	1.5
25. Algae	(0)	0.5	1	1.5
26. Wetland plants in streambed	NA		FACW = 0.75; OBL = 1.5 Other = 0	

\*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Beaver dam backing up stream

Sketch:

Bank height: 2-4

Bankfull width: 12

Water depth: 2" - 18"

Substrate: silt, sand

Velocity: fast, moderate, slow

Clarity: clear, turbid, slightly turbid

saw 2 dams

stream is Perennial  
influenced by Beaver Activity



NC DWQ Stream Identification Form Version 4.11

SS/H

Date: 8/14/17	Project/Site: C540	Latitude: 35.68022
Evaluator: S. Easterly, T. Carter	County: Wake	Longitude: -78.8242
Total Points: Stream is at least intermittent if $\geq 19$ or perennial if $\geq 30^*$ 22.5	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name: Apex

A. Geomorphology (Subtotal = 10.5)

	Absent	Weak	Moderate	Strong
1 <sup>a</sup> Continuity of channel bed and bank	0	1	2	3
2. Sinuosity of channel along thalweg	0	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3
4. Particle size of stream substrate	0	1	2	3
5. Active/relict floodplain	0	1	2	3
6. Depositional bars or benches	0	1	2	3
7. Recent alluvial deposits	0	1	2	3
8. Headcuts	0	1	2	3
9. Grade control	0	0.5	1	1.5
10. Natural valley	0	0.5	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

\*artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 5)

12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 7)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	0	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	1	1.5
26. Wetland plants in streambed NA	FACW = 0.75; OBL = 1.5 Other = 0			

\*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

Bank height: 4  
 Bankfull width: 4  
 Water depth: 1"-3"  
 Substrate: gravel, silt, sand  
 Velocity: fast, moderate, slow  
 Clarity: clean, turbid, slightly turbid



NC DWQ Stream Identification Form Version 4.11

Date: 8/15/17	Project/Site: C540	Latitude: 35.165853
Evaluator: SEASTRY, T. Carle	County: Wake	Longitude: -78.7021
Total Points: Stream is at least intermittent if $\geq 19$ or perennial if $\geq 30^*$ 27	Stream Determination (circle one) Ephemeral <u>Intermittent</u> Perennial	Other e.g. Quad Name: LAKE WHEELER

A. Geomorphology (Subtotal = 11.5)

	Absent	Weak	Moderate	Strong
1 <sup>a</sup> Continuity of channel bed and bank	0	1	2	(3)
2. Sinuosity of channel along thalweg	0	1	(2)	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	(2)	3
4. Particle size of stream substrate	0	1	(2)	3
5. Active/relict floodplain	0	(1)	2	3
6. Depositional bars or benches	0	(1)	2	3
7. Recent alluvial deposits	0	1	2	3
8. Headcuts	0	1	2	3
9. Grade control	0	0.5	1	1.5
10. Natural valley	0	0.5	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

<sup>a</sup> artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 8)

12. Presence of Baseflow	0	1	2	(3)
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 7.5)

18. Fibrous roots in streambed	(3)	2	1	0
19. Rooted upland plants in streambed	(3)	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	(1)	2	3
21. Aquatic Mollusks	0	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

\*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

Bank height: 6" - 12"  
 Bankfull width: 4'  
 Water depth: 2" - 12"  
 Substrate: sand, gravel, silt  
 Velocity: fast, moderate, slow  
 Clarity: clean, turbid, slightly turbid

SSI starts at a pipe and confluences with another stream outside of the study area on approx 20'



## WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

WR

Project/Site: Triangle Expressway (A1) City/County: Wake Sampling Date: 2/23/2010  
 Applicant/Owner: N.C. Turnpike Authority State: NC Sampling Point: A1WK006  
 Investigator(s): Mark Mickley, Mulkey, Inc. Section, Township, Range: Feltonville  
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave  
 Slope (%): 4 Lat: 35.680433 Long: -78.823754 Datum: NAD83  
 Soil Map Unit Name: Herndon silt loam NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks:  NCWAM - Bottomland Hardwood			

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (minimum of two required)</b>	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)	
<input checked="" type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<b>Field Observations:</b>			
Surface Water Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>&lt;1.0"</u>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>2"</u>		
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			



## VEGETATION – Use scientific names of plants.

Sampling Point: A1WK006

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Liriodendron tulipifera</i>	40	<input checked="" type="checkbox"/>	FAC
2. <i>Acer rubrum</i>	20	<input checked="" type="checkbox"/>	FAC
3. <i>Quercus laurifolia</i>	20	<input checked="" type="checkbox"/>	FACW
4. <i>Platanus occidentalis</i>	10		FACW
5.			
6.			
7.			
90 = Total Cover			
Sapling Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Carpinus caroliniana</i>	10	<input checked="" type="checkbox"/>	FAC
2. <i>Ilex opaca</i>	10	<input checked="" type="checkbox"/>	FAC
3.			
4.			
5.			
6.			
7.			
20 = Total Cover			
Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Microstegium vimineum</i>	50	<input checked="" type="checkbox"/>	FAC
2. <i>Carex sp.</i>	30		
3. <i>Juncus effusus</i>	2		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
82 = Total Cover			
Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Smilax rotundifolia</i>	10	<input checked="" type="checkbox"/>	FAC
2. <i>Toxicodendron radicans</i>	2		FAC
3.			
4.			
5.			
12 = Total Cover			

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

Total % Cover of: Multiply by:

OBL species x 1 =

FACW species x 2 =

FAC species x 3 =

FACU species x 4 =

UPL species x 5 =

Column Totals: (A) (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

☐ Rapid Test for Hydrophytic Vegetation

☒ Dominance Test is >50%

☐ Prevalence Index is ≤3.0<sup>1</sup>

☐ Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

**Herb** – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes ☒ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)



**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbic Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:



# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont ,

WR

Project/Site: Triangle Expressway (A1) City/County: Wake Sampling Date: 2/23/2010  
 Applicant/Owner: N.C. Turnpike Authority State: NC Sampling Point: A1WK005-Up  
 Investigator(s): Mark Mickley, Mulkey, Inc. Section, Township, Range: Feltonville  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave  
 Slope (%): 4% Lat: 35.680508 Long: -78.823534 Datum: NAD83  
 Soil Map Unit Name: Herndon silt loam NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks:		

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:  No indicators, 4% Slope		



WR

**VEGETATION** – Use scientific names of plants.Sampling Point: A1WK005-Up

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Quercus alba</i>	30	<input checked="" type="checkbox"/>	FACU	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)  Total Number of Dominant Species Across All Strata: <u>8</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>62%</u> (A/B)
2. <i>Carya ovata</i>	20	<input checked="" type="checkbox"/>	FACU	
3. <i>Liriodendron tulipifera</i>	20	<input checked="" type="checkbox"/>	FAC	
4. <i>Pinus taeda</i>	10	<input checked="" type="checkbox"/>	FAC	
5. _____	_____	<input type="checkbox"/>	_____	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
6. _____	_____	<input type="checkbox"/>	_____	
7. _____	_____	<input type="checkbox"/>	_____	
	80	= Total Cover		
Sapling Stratum (Plot size: <u>15'</u> )				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
1. <i>Quercus alba</i>	20	<input checked="" type="checkbox"/>	FACU	
2. <i>Liquidambar styraciflua</i>	15	<input checked="" type="checkbox"/>	FAC	
3. <i>Liriodendron tulipifera</i>	15	<input checked="" type="checkbox"/>	FAC	
4. <i>Ilex opaca</i>	10	<input type="checkbox"/>	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. _____	_____	<input type="checkbox"/>	_____	
6. _____	_____	<input type="checkbox"/>	_____	
7. _____	_____	<input type="checkbox"/>	_____	
	60	= Total Cover		
Shrub Stratum (Plot size: <u>15'</u> )				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  <b>Woody vine</b> – All woody vines, regardless of height.
1. _____	_____	<input type="checkbox"/>	_____	
2. _____	_____	<input type="checkbox"/>	_____	
3. _____	_____	<input type="checkbox"/>	_____	
4. _____	_____	<input type="checkbox"/>	_____	<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
5. _____	_____	<input type="checkbox"/>	_____	
6. _____	_____	<input type="checkbox"/>	_____	
7. _____	_____	<input type="checkbox"/>	_____	
	_____	= Total Cover		
Herb Stratum (Plot size: <u>5'</u> )				
1. <i>Polystichum acrostichoides</i>	5	<input checked="" type="checkbox"/>	FAC	
2. _____	_____	<input type="checkbox"/>	_____	
3. _____	_____	<input type="checkbox"/>	_____	
4. _____	_____	<input type="checkbox"/>	_____	
5. _____	_____	<input type="checkbox"/>	_____	
6. _____	_____	<input type="checkbox"/>	_____	
7. _____	_____	<input type="checkbox"/>	_____	
8. _____	_____	<input type="checkbox"/>	_____	
9. _____	_____	<input type="checkbox"/>	_____	
10. _____	_____	<input type="checkbox"/>	_____	
11. _____	_____	<input type="checkbox"/>	_____	
12. _____	_____	<input type="checkbox"/>	_____	
	5	= Total Cover		
Woody Vine Stratum (Plot size: <u>30'</u> )				
1. <i>None</i>	_____	<input type="checkbox"/>	_____	
2. _____	_____	<input type="checkbox"/>	_____	
3. _____	_____	<input type="checkbox"/>	_____	
4. _____	_____	<input type="checkbox"/>	_____	
5. _____	_____	<input type="checkbox"/>	_____	
	_____	= Total Cover		

Remarks: (Include photo numbers here or on a separate sheet.)



[illegible]



# WETLAND RATING WORKSHEET (4th VERSION)

WR  
A1WK

Project Name: Southeastern Connector County: Wake  
 Nearest Road: Dutch Elm Drive Date: 2/23/2010  
 Wetland Area (ac): 3.02 Wetland Width (ft): >100  
 Name of Evaluator(s): Mark Mickley; Mulkey Inc.

## WETLAND LOCATION:

☐ on sound or estuary, pond or lake  
☒ on perennial stream  
☐ on intermittent stream  
☐ within interstream divide  
☐ other \_\_\_\_\_

## SOILS:

Soil Series: Wehadke and Bibb soils  
☐ predominantly organic (humus, muck or peat)  
☐ predominantly mineral (non-sandy)  
☒ predominantly sandy

## HYDRAULIC FACTORS:

☒ freshwater  
☐ brackish  
☐ steep topography  
☐ ditched or channelized  
☒ total wetland width  $\geq$  100 feet

## ADJACENT LAND USE:

(within 1/2 mile upstream, upslope or radius)  
☒ forested/natural vegetation 50 %  
☒ agricultural/urbanized 25 %  
☒ impervious surface 25 %  
 Adjacent Special Natural Areas \_\_\_\_\_

## DOMINANT VEGETATION:

1 See USACE wetland data form  
 2 \_\_\_\_\_  
 3 \_\_\_\_\_  
 4 \_\_\_\_\_

## FLOODING AND WETNESS:

☐ semipermanently to permanently flooded or inundated  
☒ seasonally flooded or inundated  
☐ intermittently flooded or temporary surface water  
☐ no evidence of flooding or surface water

## WETLAND TYPE: (select one)\*

☒ Bottomland Hardwood Forest  
☐ Swamp Forest  
☐ Carolina Bay  
☐ Pocosin  
☐ Pine Savannah  
☐ Freshwater Marsh  
☐ Bog/Fen  
☐ Headwater Forest  
☐ Bog Forest  
☐ Ephemeral Wetland  
☐ Other: \_\_\_\_\_

\* The rating system cannot be applied to salt and brackish marshes or stream channels.

## DEM RATING

WATER STORAGE	<u>5</u>	X	4	=	<u>20</u>
BANK, SHORELINE STABILIZATION	<u>4</u>	X	4	=	<u>16</u>
POLLUTANT REMOVAL	<u>4</u> *	X	5	=	<u>20</u>
WILDLIFE HABITAT	<u>3</u>	X	2	=	<u>6</u>
AQUATIC LIFE HABITAT	<u>3</u>	X	4	=	<u>12</u>
RECREATION/EDUCATION	<u>2</u>	X	1	=	<u>2</u>
TOTAL WETLAND SCORE =					<u>76</u>

\* Add one point if in sensitive watershed and >10% nonpoint disturbance within 1/2 mile upstream, upslope, or radius.



# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

WS

Project/Site: Triangle Expressway (A1X) City/County: Wake Sampling Date: 3/8/2011  
 Applicant/Owner: N.C. Turnpike Authority State: NC Sampling Point: AIXWA109  
 Investigator(s): Mark L. Mickley, Mulkey, Inc. Section, Township, Range: Feltonville  
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None  
 Slope (%): 0% Lat: 35.678858 Long: -78.824126 Datum: NAD 83  
 Soil Map Unit Name: Wehadkee and Bibb soils NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks:  NCWAM - Bottomland Forest		

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)		<b>Secondary Indicators (minimum of two required)</b> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>3"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



## VEGETATION – Use scientific names of plants.

Sampling Point: AIXWA109

Tree Stratum (Plot size: 30 ft )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Liriodendron tulipifera</i>	40	<input checked="" type="checkbox"/>	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A)  Total Number of Dominant Species Across All Strata: <u>6</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <i>Acer rubrum</i>	20	<input checked="" type="checkbox"/>	FAC	
3. <i>Carpinus caroliniana</i>	10	<input type="checkbox"/>	FAC	
4. <i>Platanus occidentalis</i>	5	<input type="checkbox"/>	FACW	
5. _____		<input type="checkbox"/>		
6. _____		<input type="checkbox"/>		
7. _____		<input type="checkbox"/>		
75 = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
<b>Sapling Stratum (Plot size: 15 ft )</b>				
1. <i>Ligustrum sinense</i>	5	<input checked="" type="checkbox"/>	FAC	
2. <i>Carpinus caroliniana</i>	5	<input checked="" type="checkbox"/>	FAC	
3. <i>Ilex opaca</i>	5	<input checked="" type="checkbox"/>	FAC	
4. _____		<input type="checkbox"/>		
5. _____		<input type="checkbox"/>		
15 = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<b>Shrub Stratum (Plot size: 15 ft )</b>				
1. _____		<input type="checkbox"/>		
2. _____		<input type="checkbox"/>		
3. _____		<input type="checkbox"/>		
4. _____		<input type="checkbox"/>		
5. _____		<input type="checkbox"/>		
_____ = Total Cover				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  <b>Woody vine</b> – All woody vines, regardless of height.
<b>Herb Stratum (Plot size: 5 ft )</b>				
1. <i>Microstegium vimineum</i>	75	<input checked="" type="checkbox"/>	FAC	
2. <i>Carex sp.</i>	5	<input type="checkbox"/>		
3. _____		<input type="checkbox"/>		
4. _____		<input type="checkbox"/>		
5. _____		<input type="checkbox"/>		
80 = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>Woody Vine Stratum (Plot size: 30 ft )</b>				
1. <i>Vitis rotundifolia</i>	<2	<input type="checkbox"/>	FAC	
2. <i>Rubus sp.</i>	<2	<input type="checkbox"/>		
3. _____		<input type="checkbox"/>		
4. _____		<input type="checkbox"/>		
5. _____		<input type="checkbox"/>		
_____ = Total Cover				

Remarks: (Include photo numbers here or on a separate sheet.)



## SOIL

Sampling Point: AIXWA109

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbritic Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Piedmont Floodplain Soils (F19)  
     (**MLRA 136, 147**)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:



# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

W/S

Project/Site: Triangle Expressway (A1X) City/County: Wake Sampling Date: 3/8/2011  
 Applicant/Owner: N.C. Turnpike Authority State: NC Sampling Point: A1XWA101-UP  
 Investigator(s): Mark L. Mickley, Mulkey, Inc. Section, Township, Range: Feltonville  
 Landform (hillslope, terrace, etc.): Levee Local relief (concave, convex, none): None  
 Slope (%): 0% Lat: 35.678858 Long: -78.824126 Datum: NAD 83  
 Soil Map Unit Name: Wehadkee and Bibb soils NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:  No indicators		



## VEGETATION – Use scientific names of plants.

Sampling Point: A1XWA101-Up

Tree Stratum (Plot size: 30 ft )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Liriodendron tulipifera</i>	80	<input checked="" type="checkbox"/>	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)  Total Number of Dominant Species Across All Strata: <u>5</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2.				
3.				
4.				
5.				
6.				
7.				
80 = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
<b>Sapling Stratum (Plot size: 15 ft )</b>				
1. <i>Liriodendron tulipifera</i>	10	<input checked="" type="checkbox"/>	FAC	
2. <i>Carpinus caroliniana</i>	10	<input checked="" type="checkbox"/>	FAC	
3.				
4.				
5.				
20 = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<b>Shrub Stratum (Plot size: 15 ft )</b>				
1.				
2.				
3.				
4.				
5.				
= Total Cover				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  <b>Woody vine</b> – All woody vines, regardless of height.
<b>Herb Stratum (Plot size: 5 ft )</b>				
1. <i>Microstegium vimineum</i>	60	<input checked="" type="checkbox"/>	FAC	
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
60 = Total Cover				
<b>Woody Vine Stratum (Plot size: 30 ft )</b>				
1. <i>Smilax rotundifolia</i>	5	<input checked="" type="checkbox"/>	FAC	<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2.				
3.				
4.				
5.				
5 = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				



**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
- ☐ Thin Dark Surface (S9) (**MLRA 147, 148**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
- ☐ Umbric Surface (F13) (**MLRA 136, 122**)
- ☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Piedmont Floodplain Soils (F19)  
     (**MLRA 136, 147**)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No indicators



# WETLAND RATING WORKSHEET (4th VERSION)

WS

Project Name: TriEx County: Wake  
 Nearest Road: Sunset Lake Road Date: 3/8/2011  
 Wetland Area (ac): 1.95 Wetland Width (ft): >100'  
 Name of Evaluator(s): Mark L. Mickley, Mulkey Engineers & Consultants

## WETLAND LOCATION: A1XWA

☐ on sound or estuary, pond or lake  
☒ on perennial stream  
☐ on intermittent stream  
☐ within interstream divide  
☐ other \_\_\_\_\_

## SOILS:

Soil Series: Wehadkee and Bibb soils  
☐ predominantly organic (humus, muck or peat)  
☒ predominantly mineral (non-sandy)  
☐ predominantly sandy

## HYDRAULIC FACTORS:

☒ freshwater  
☐ brackish  
☐ steep topography  
☐ ditched or channelized  
☐ total wetland width  $\geq$  100 feet

## WETLAND TYPE: (select one)\*

☒ Bottomland Hardwood Forest ☐ Bog/Fen  
☐ Swamp Forest ☐ Headwater Forest  
☐ Carolina Bay ☐ Bog Forest  
☐ Pocosin ☐ Ephemeral Wetland  
☐ Pine Savannah ☐ Other: \_\_\_\_\_  
☐ Freshwater Marsh

\* The rating system cannot be applied to salt and brackish marshes or stream channels.

## DEM RATING

WATER STORAGE	<u>4</u>	X	<u>4</u>	=	<u>16</u>
BANK, SHORELINE STABILIZATION	<u>4</u>	X	<u>4</u>	=	<u>16</u>
POLLUTANT REMOVAL	<u>4</u> *	X	<u>5</u>	=	<u>20</u>
WILDLIFE HABITAT	<u>3</u>	X	<u>2</u>	=	<u>6</u>
AQUATIC LIFE HABITAT	<u>3</u>	X	<u>4</u>	=	<u>12</u>
RECREATION/EDUCATION	<u>1</u>	X	<u>1</u>	=	<u>1</u>
TOTAL WETLAND SCORE =					<u>71</u>

\* Add one point if in sensitive watershed and >10% nonpoint disturbance within 1/2 mile upstream, upslope, or radius.



# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

WBC

Project/Site: Triangle Expressway (A4) City/County: Wake Sampling Date: 4/7/2010  
 Applicant/Owner: N.C. Turnpike Authority State: NC Sampling Point: A4WB001 WET1  
 Investigator(s): Cindy Carr, Mulkey, Inc. Section, Township, Range: Swift Creek  
 Landform (hillslope, terrace, etc.): sideslope Local relief (concave, convex, none): concave  
 Slope (%): 0 - 4 Lat: 35.677083 Long: -78.749077 Datum: SP NAD83 feet  
 Soil Map Unit Name: Colfax (Cn) sandy loam NWI classification: PFO1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks:  NCWAM - Bottomland Hardwood Forest Profile taken about 20 feet E of A4WB001, north of study area boundary. A4WB wetland extends across boundary; boundary is open along north side and south side of study area corridor.	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>9</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:  Microtopographic depressions and drainageways.		



Eastern Mountains and Piedmont – Peer-Review Draft 6-25-2009



WBC

## SOIL

Sampling Point: A4WB001 WET1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0 - 2	5 YR 3/3	80	5 YR 2.5/1	20	C	M	SiClay	
2 - 9	7.5 YR 4/1	70	5 YR 5/8	20	R	M	Clay	Oxydized rhizospheres
			10 YR 6/8	10	R	M, PL		Saturated at 9 inches
9 - 14	G4/N	95	5 YR 5/8	5	R	M	Clay	
14 - 16	10 YR 8/1	100					Sand	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

## Hydric Soil Indicators:

- ☐ Histosol (A1)  
☐ Histic Epipedon (A2)  
☐ Black Histic (A3)  
☐ Hydrogen Sulfide (A4)  
☐ Stratified Layers (A5)  
☐ 2 cm Muck (A10) (LRR N)  
☐ Depleted Below Dark Surface (A11)  
☐ Thick Dark Surface (A12)  
☐ Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)  
☐ Polyvalue Below Surface (S8) (MLRA 147, 148)  
☐ Thin Dark Surface (S9) (MLRA 147, 148)  
☐ Loamy Gleyed Matrix (F2)  
☒ Depleted Matrix (F3)  
☐ Redox Dark Surface (F6)  
☐ Depleted Dark Surface (F7)  
☐ Redox Depressions (F8)  
☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)  
☐ Umbric Surface (F13) (MLRA 136, 122)  
☐ Piedmont Floodplain Soils (F19) (MLRA 148)

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (MLRA 147)  
☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:



# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

WBC

Project/Site: Triangle Expressway (A4) City/County: Wake Sampling Date: 4/7/2010  
 Applicant/Owner: N.C. Turnpike Authority State: NC Sampling Point: A4WB010 WET2  
 Investigator(s): Cindy Carr, Mulkey, Inc. Section, Township, Range: Swift Creek  
 Landform (hillslope, terrace, etc.): toe of slope Local relief (concave, convex, none): convex  
 Slope (%): 0 - 2 Lat: 35.676730 Long: -78.748925 Datum: SP NAD83 feet  
 Soil Map Unit Name: Colfax (Cn) sandy loam NWI classification: PFO1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks:  NCWAM - Bottomland Hardwood Forest. Perennial stream A4SA is wetland boundary of A4WB along right side of channel. Profile taken about 18 feet SW of A4WB010 and A4SA004.			

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>8</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>6</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  			
Remarks:  upper floodplain on right side A4SA.			



## VEGETATION – Use scientific names of plants.

Sampling Point: A4WB010 WET2

Tree Stratum (Plot size: 30 ft )	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	40	<input checked="" type="checkbox"/>	FAC
2. <i>Liquidambar styraciflua</i>	25	<input checked="" type="checkbox"/>	FAC
3. <i>Prunus serotina</i>	5	<input type="checkbox"/>	FACU
4. <i>Quercus phellos</i>	5	<input type="checkbox"/>	FACW
5. <i>Pinus taeda</i>	5	<input type="checkbox"/>	
6. _____		<input type="checkbox"/>	
7. _____		<input type="checkbox"/>	
80 = Total Cover			
Sapling Stratum (Plot size: 15 ft )	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	40	<input checked="" type="checkbox"/>	FAC
2. <i>Liquidambar styraciflua</i>	40	<input checked="" type="checkbox"/>	FAC
3. _____		<input type="checkbox"/>	
4. _____		<input type="checkbox"/>	
5. _____		<input type="checkbox"/>	
6. _____		<input type="checkbox"/>	
7. _____		<input type="checkbox"/>	
80 = Total Cover			
Shrub Stratum (Plot size: 15 ft )	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	20	<input checked="" type="checkbox"/>	FAC
2. <i>Liquidambar styraciflua</i>	20	<input checked="" type="checkbox"/>	FAC
3. _____		<input type="checkbox"/>	
4. _____		<input type="checkbox"/>	
5. _____		<input type="checkbox"/>	
6. _____		<input type="checkbox"/>	
7. _____		<input type="checkbox"/>	
40 = Total Cover			
Herb Stratum (Plot size: 5 ft )	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Eulalia viminea (Microstegium vimineum)</i>	40	<input checked="" type="checkbox"/>	FAC
2. <i>Polystichum acrostichoides</i>	10	<input checked="" type="checkbox"/>	FAC
3. <i>Juncus effusus</i>	5	<input type="checkbox"/>	FACW
4. _____		<input type="checkbox"/>	
5. _____		<input type="checkbox"/>	
6. _____		<input type="checkbox"/>	
7. _____		<input type="checkbox"/>	
8. _____		<input type="checkbox"/>	
9. _____		<input type="checkbox"/>	
10. _____		<input type="checkbox"/>	
11. _____		<input type="checkbox"/>	
12. _____		<input type="checkbox"/>	
55 = Total Cover			
Woody Vine Stratum (Plot size: 30 ft )	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Smilax rotundifolia</i>	60	<input checked="" type="checkbox"/>	FAC
2. <i>Lonicera japonica</i>	20	<input checked="" type="checkbox"/>	FAC
3. <i>Vitis rotundifolia</i>	10	<input type="checkbox"/>	FAC
4. _____		<input type="checkbox"/>	
5. _____		<input type="checkbox"/>	
90 = Total Cover			

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 10 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_

OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_

FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_

FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_

FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_

UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_

Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)

Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**

☐ Rapid Test for Hydrophytic Vegetation

☒ Dominance Test is >50%

☐ Prevalence Index is ≤3.0<sup>1</sup>

☐ Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

**Herb** – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes ☒ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)



Sampling Point: A4WB010 WET2

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## WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

WBC

Project/Site: Triangle Expressway (A4) City/County: Wake Sampling Date: 4/7/2010  
 Applicant/Owner: N.C. Turnpike Authority State: NC Sampling Point: A4WB001 UP1  
 Investigator(s): Cindy Carr, Mulkey, Inc. Section, Township, Range: Swift Creek  
 Landform (hillslope, terrace, etc.): midslope Local relief (concave, convex, none): convex  
 Slope (%): 2 - 4 Lat: 35.677093 Long: -78.749179 Datum: SP NAD83 feet  
 Soil Map Unit Name: Colfax (Cn) sandy loam NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed?

Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic?

(If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?

Yes ☒ No ☐

Hydric Soil Present?

Yes ☐ No ☒

Wetland Hydrology Present?

Yes ☐ No ☒

Is the Sampled Area  
within a Wetland?

Yes ☐ No ☒

Remarks:

Profile taken about 8 feet W of A4WB001. Wetland boundary is open and extends across north and south study area boundaries.

### HYDROLOGY

#### Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

☐ Surface Water (A1)

☐ High Water Table (A2)

☐ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Water-Stained Leaves (B9)

☐ Aquatic Fauna (B13)

☐ True Aquatic Plants (B14)

☐ Hydrogen Sulfide Odor (C1)

☐ Oxidized Rhizospheres on Living Roots (C3)

☐ Presence of Reduced Iron (C4)

☐ Recent Iron Reduction in Tilled Soils (C6)

☐ Thin Muck Surface (C7)

☐ Other (Explain in Remarks)

#### Secondary Indicators (minimum of two required)

☐ Surface Soil Cracks (B6)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Drainage Patterns (B10)

☐ Moss Trim Lines (B16)

☐ Dry-Season Water Table (C2)

☐ Crayfish Burrows (C8)

☐ Saturation Visible on Aerial Imagery (C9)

☐ Stunted or Stressed Plants (D1)

☐ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☒ FAC-Neutral Test (D5)

#### Field Observations:

Surface Water Present?

Yes ☐ No ☒

Depth (inches): \_\_\_\_\_

Water Table Present?

Yes ☐ No ☒

Depth (inches): \_\_\_\_\_

Saturation Present?

Yes ☐ No ☒

Depth (inches): \_\_\_\_\_

(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



Sampling Point: **WBC**  
A4WB001 UP1

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## SOIL

Sampling Point: A4WB001 UP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0 - 3	7.5 YR 4/4	100					SaClay	fine roots
3 - 6	2.5 Y 5/3	90	7.5 YR 5/8	10	C	M	Clay	few gravel
6 - 14	7.5 YR 5/6	90	7.5 YR 7/8	15	C	M	Clay	few gravel
			7.5 YR 5/8	15	C	M		

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

## Hydric Soil Indicators:

- ☐ Histosol (A1)  
☐ Histic Epipedon (A2)  
☐ Black Histic (A3)  
☐ Hydrogen Sulfide (A4)  
☐ Stratified Layers (A5)  
☐ 2 cm Muck (A10) (LRR N)  
☐ Depleted Below Dark Surface (A11)  
☐ Thick Dark Surface (A12)  
☐ Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)  
☐ Polyvalue Below Surface (S8) (MLRA 147, 148)  
☐ Thin Dark Surface (S9) (MLRA 147, 148)  
☐ Loamy Gleyed Matrix (F2)  
☐ Depleted Matrix (F3)  
☐ Redox Dark Surface (F6)  
☐ Depleted Dark Surface (F7)  
☐ Redox Depressions (F8)  
☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)  
☐ Umbric Surface (F13) (MLRA 136, 122)  
☐ Piedmont Floodplain Soils (F19) (MLRA 148)

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (MLRA 147)  
☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:



# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

WBC

Project/Site: Triangle Expressway (A4) City/County: Wake Sampling Date: 4/7/2010  
 Applicant/Owner: N.C. Turnpike Authority State: NC Sampling Point: A4WB010 UP2  
 Investigator(s): Cindy Carr, Mulkey, Inc. Section, Township, Range: Swift Creek  
 Landform (hillslope, terrace, etc.): sideslope Local relief (concave, convex, none): convex  
 Slope (%): 0 - 4 Lat: 35.676741 Long: -78.749015 Datum: SP NAD83 feet  
 Soil Map Unit Name: Colfax (Cn) sandy loam NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks:  Profile taken about 3 feet SW of A4WB010. Adjacent to A4SA, upper floodplain slope.	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



WBC

## VEGETATION – Use scientific names of plants.

Sampling Point: A4WB010 UP2

Tree Stratum (Plot size: 30 ft )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Pinus taeda</i>	5	<input checked="" type="checkbox"/>	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)  Total Number of Dominant Species Across All Strata: 7 (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)
2.				
3.				
4.				
5.				
6.				
7.				
5 = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  <b>Woody vine</b> – All woody vines, regardless of height.
				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
				<b>Woody Vine Stratum (Plot size: 30 ft )</b> 1. <i>Smilax rotundifolia</i> 30 <input checked="" type="checkbox"/> FAC 2. <i>Lonicera japonica</i> 20 <input checked="" type="checkbox"/> FAC 3. <i>Vitis rotundifolia</i> 5 <input type="checkbox"/> FAC 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/> 10. <input type="checkbox"/> 11. <input type="checkbox"/> 12. <input type="checkbox"/> 55 = Total Cover
Remarks: (Include photo numbers here or on a separate sheet.)				

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

### Indicators for Problematic Hydric Soils<sup>3</sup>

- ☐ 2 cm Muck (A10) **(MLRA 147)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:



## WETLAND RATING WORKSHEET (4th VERSION)

WBC

Project Name: Southeastern Connector A4 County: Wake  
 Nearest Road: West Lake Road, Oxford Green Road Date: 4/7/2010  
 Wetland Area (ac): 3.8 Wetland Width (ft): > 100 feet  
 Name of Evaluator(s): Cindy Carr, Mulkey

**WETLAND LOCATION: A4WB**

☐ on sound or estuary, pond or lake  
☒ on perennial stream  
☐ on intermittent stream  
☐ within interstream divide  
☐ other \_\_\_\_\_

**SOILS:**

Soil Series: Appling (AgC2)  
Colfax (Cn), Worsham (Wy)  
☐ predominantly organic (humus, muck or peat)  
☒ predominantly mineral (non-sandy)  
☐ predominantly sandy

**HYDRAULIC FACTORS:**

☒ freshwater  
☐ brackish  
☐ steep topography  
☐ ditched or channelized  
☐ total wetland width  $\geq$  100 feet

**ADJACENT LAND USE:**

(within 1/2 mile upstream, upslope or radius)

☒ forested/natural vegetation 60 %  
☒ agricultural/ urbanized 38 %  
☒ impervious surface 2 %  
 Adjacent Special Natural Areas \_\_\_\_\_

**DOMINANT VEGETATION:**

1 *Liriodendron tulipifera*  
 2 *Rubus argutus*  
 3 *Acer rubrum*  
 4 *Rosa multiflora*

**FLOODING AND WETNESS:**

☐ semipermanently to permanently flooded or inundated  
☐ seasonally flooded or inundated  
☒ intermittently flooded or temporary surface water  
☐ no evidence of flooding or surface water

**WETLAND TYPE: (select one)\***

☒ Bottomland Hardwood Forest  
☐ Swamp Forest  
☐ Carolina Bay  
☐ Pocosin  
☐ Pine Savannah  
☐ Freshwater Marsh  
☐ Bog/Fen  
☐ Headwater Forest  
☐ Bog Forest  
☐ Ephemeral Wetland  
☐ Other: \_\_\_\_\_

\* The rating system cannot be applied to salt and brackish marshes or stream channels.

**DEM RATING**

WATER STORAGE	<u>2</u>	X	4	=	<u>8</u>
BANK, SHORELINE STABILIZATION	<u>2</u>	X	4	=	<u>8</u>
POLLUTANT REMOVAL	<u>2</u> *	X	5	=	<u>10</u>
WILDLIFE HABITAT	<u>5</u>	X	2	=	<u>10</u>
AQUATIC LIFE HABITAT	<u>3</u>	X	4	=	<u>12</u>
RECREATION/EDUCATION	<u>1</u>	X	1	=	<u>1</u>
TOTAL WETLAND SCORE =					<u>49</u>

\* Add one point if in sensitive watershed and >10% nonpoint disturbance within 1/2 mile upstream, upslope, or radius.

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

WBZ

Project/Site: Triangle Expressway (A6) City/County: Wake Sampling Date: 3/24/2010  
 Applicant/Owner: N.C. Turnpike Authority State: NC Sampling Point: Wet A6WD008  
 Investigator(s): Thomas Barrett, Mulkey, Inc. Section, Township, Range: McCuller's Crossroads  
 Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): concave  
 Slope (%): 0 Lat: 35.654611 Long: -78.701803 Datum: NAD 83  
 Soil Map Unit Name: Wehadkee and Bibb Soils NWI classification: PFO1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks:  NCWAM - Bottomland Hardwood Forest			

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b>		<b>Secondary Indicators (minimum of two required)</b>	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<b>Field Observations:</b>			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>6</u>		
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			



## VEGETATION – Use scientific names of plants.

Sampling Point: Wet A6WD008

Tree Stratum (Plot size: 30 ft )	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Ulmus americana</i>	10	<input type="checkbox"/>	FACW
2. <i>Acer rubrum</i>	50	<input checked="" type="checkbox"/>	FAC
3. <i>Liriodendron tulipifera</i>	10	<input type="checkbox"/>	FAC
4. _____		<input type="checkbox"/>	
5. _____		<input type="checkbox"/>	
6. _____		<input type="checkbox"/>	
7. _____		<input type="checkbox"/>	
	70 = Total Cover		
<b>Sapling Stratum (Plot size: 15 ft )</b>			
1. <i>Ligustrum sinense</i>	20	<input checked="" type="checkbox"/>	FAC
2. _____		<input type="checkbox"/>	
3. _____		<input type="checkbox"/>	
4. _____		<input type="checkbox"/>	
5. _____		<input type="checkbox"/>	
6. _____		<input type="checkbox"/>	
7. _____		<input type="checkbox"/>	
	20 = Total Cover		
<b>Shrub Stratum (Plot size: 15 ft )</b>			
1. <i>Not Applicable</i>		<input type="checkbox"/>	
2. _____		<input type="checkbox"/>	
3. _____		<input type="checkbox"/>	
4. _____		<input type="checkbox"/>	
5. _____		<input type="checkbox"/>	
6. _____		<input type="checkbox"/>	
7. _____		<input type="checkbox"/>	
<b>Herb Stratum (Plot size: 5 ft )</b>			
1. <i>Arundinaria gigantea</i>	10	<input checked="" type="checkbox"/>	FACW
2. _____		<input type="checkbox"/>	
3. _____		<input type="checkbox"/>	
4. _____		<input type="checkbox"/>	
5. _____		<input type="checkbox"/>	
6. _____		<input type="checkbox"/>	
7. _____		<input type="checkbox"/>	
8. _____		<input type="checkbox"/>	
9. _____		<input type="checkbox"/>	
10. _____		<input type="checkbox"/>	
11. _____		<input type="checkbox"/>	
12. _____		<input type="checkbox"/>	
	10 = Total Cover		
<b>Woody Vine Stratum (Plot size: 30 ft )</b>			
1. <i>Smilax rotundifolia</i>	30	<input checked="" type="checkbox"/>	FAC
2. <i>Vitis rotundifolia</i>	20	<input checked="" type="checkbox"/>	FAC
3. _____		<input type="checkbox"/>	
4. _____		<input type="checkbox"/>	
5. _____		<input type="checkbox"/>	
	50 = Total Cover		

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)
Prevalence Index = B/A = _____	

**Hydrophytic Vegetation Indicators:**

☐ Rapid Test for Hydrophytic Vegetation

☒ Dominance Test is >50%

☐ Prevalence Index is ≤3.0<sup>1</sup>

☐ Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

**Herb** – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes ☒ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)

## SOIL

Sampling Point: Wet A6WD008

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- ☐ Histosol (A1)  
☐ Histic Epipedon (A2)  
☐ Black Histic (A3)  
☐ Hydrogen Sulfide (A4)  
☐ Stratified Layers (A5)  
☐ 2 cm Muck (A10) (**LRR N**)  
☐ Depleted Below Dark Surface (A11)  
☐ Thick Dark Surface (A12)  
☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbritic Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Piedmont Floodplain Soils (F19)  
     (**MLRA 136, 147**)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:



# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

WBZ

Project/Site: Triangle Expressway (A6) City/County: Wake Sampling Date: 3/24/2010  
 Applicant/Owner: N.C. Turnpike Authority State: NC Sampling Point: UP A6WD009  
 Investigator(s): Thomas Barrett, Mulkey, Inc. Section, Township, Range: McCuller's Crossroads  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex  
 Slope (%): 0 - 1 Lat: 35.654308 Long: -78.701685 Datum: NAD 83  
 Soil Map Unit Name: Wehadkee and Bibb Soils NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			
Upland data point lies directly between wetlands A6WD and A6WE and is used for both wetlands.			

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		
No obvious hydrologic indicators.		

## VEGETATION – Use scientific names of plants.

Sampling Point: UP A6WD009

Tree Stratum (Plot size: 30 ft )		Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Liriodendron tulipifera</i>	10	<input type="checkbox"/>	FAC
2.	<i>Quercus nigra</i>	20	<input checked="" type="checkbox"/>	FAC
3.	<i>Pinus taeda</i>	30	<input checked="" type="checkbox"/>	FAC
4.	<i>Acer rubrum</i>	15	<input type="checkbox"/>	FAC
5.	<i>Liquidambar styraciflua</i>	15	<input type="checkbox"/>	FAC+
6.			<input type="checkbox"/>	
7.			<input type="checkbox"/>	
		90	= Total Cover	

Sapling Stratum (Plot size: 15 ft )		Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Acer rubrum</i>	20	<input checked="" type="checkbox"/>	FAC
2.			<input type="checkbox"/>	
3.			<input type="checkbox"/>	
4.			<input type="checkbox"/>	
5.			<input type="checkbox"/>	
6.			<input type="checkbox"/>	
7.			<input type="checkbox"/>	
		20	= Total Cover	

Shrub Stratum (Plot size: 15 ft )		Absolute % Cover	Dominant Species?	Indicator Status
1.	Not Applicable		<input type="checkbox"/>	
2.			<input type="checkbox"/>	
3.			<input type="checkbox"/>	
4.			<input type="checkbox"/>	
5.			<input type="checkbox"/>	
6.			<input type="checkbox"/>	
7.			<input type="checkbox"/>	
			= Total Cover	

Herb Stratum (Plot size: 5 ft )		Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Arundinaria gigantea</i>	20	<input checked="" type="checkbox"/>	FACW
2.			<input type="checkbox"/>	
3.			<input type="checkbox"/>	
4.			<input type="checkbox"/>	
5.			<input type="checkbox"/>	
6.			<input type="checkbox"/>	
7.			<input type="checkbox"/>	
8.			<input type="checkbox"/>	
9.			<input type="checkbox"/>	
10.			<input type="checkbox"/>	
11.			<input type="checkbox"/>	
12.			<input type="checkbox"/>	
		20	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft )		Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Smilax rotundifolia</i>	40	<input checked="" type="checkbox"/>	FAC
2.			<input type="checkbox"/>	
3.			<input type="checkbox"/>	
4.			<input type="checkbox"/>	
5.			<input type="checkbox"/>	
		40	= Total Cover	

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>          </u>	x 1 = <u>          </u>
FACW species <u>          </u>	x 2 = <u>          </u>
FAC species <u>          </u>	x 3 = <u>          </u>
FACU species <u>          </u>	x 4 = <u>          </u>
UPL species <u>          </u>	x 5 = <u>          </u>
Column Totals: <u>          </u> (A)	<u>          </u> (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

☐ Rapid Test for Hydrophytic Vegetation

☒ Dominance Test is >50%

☐ Prevalence Index is ≤3.0<sup>1</sup>

☐ Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

**Herb** – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes ☒ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)



## SOIL

Sampling Point: UP A6WD009

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Piedmont Floodplain Soils (F19)  
     (**MLRA 136, 147**)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No obvious hydric soil indicators.

WBZ

## WETLAND RATING WORKSHEET (4th VERSION)

A6WD

Project Name: Tri-Ex County: Wake  
 Nearest Road: US401/Old McCuller's Rd Date: 3/24/2010  
 Wetland Area (ac): 0.6 Wetland Width (ft): 100  
 Name of Evaluator(s): Tom Barrett; Mulkey Inc.

## WETLAND LOCATION:

☐ on sound or estuary, pond or lake  
☒ on perennial stream  
☐ on intermittent stream  
☐ within interstream divide  
☐ other \_\_\_\_\_

## SOILS:

Soil Series: Wehadkee and Bibb Soils  
☐ predominantly organic (humus, muck or peat)  
☒ predominantly mineral (non-sandy)  
☐ predominantly sandy

## HYDRAULIC FACTORS:

☒ freshwater  
☐ brackish  
☐ steep topography  
☐ ditched or channelized  
☒ total wetland width  $\geq$  100 feet

## ADJACENT LAND USE:

(within 1/2 mile upstream, upslope or radius)

☒ forested/natural vegetation 50 %  
☒ agricultural/ urbanized 50 %  
☐ impervious surface \_\_\_\_\_ %

Adjacent Special Natural Areas \_\_\_\_\_

## DOMINANT VEGETATION:

1 See USACE wetland data form

2 \_\_\_\_\_

3 \_\_\_\_\_

4 \_\_\_\_\_

## FLOODING AND WETNESS:

☐ semipermanently to permanently flooded or inundated  
☒ seasonally flooded or inundated  
☐ intermittently flooded or temporary surface water  
☐ no evidence of flooding or surface water

## WETLAND TYPE: (select one)\*

☒ Bottomland Hardwood Forest ☐ Bog/Fen  
☐ Swamp Forest ☐ Headwater Forest  
☐ Carolina Bay ☐ Bog Forest  
☐ Pocosin ☐ Ephemeral Wetland  
☐ Pine Savannah ☐ Other: \_\_\_\_\_  
☐ Freshwater Marsh

\* The rating system cannot be applied to salt and brackish marshes or stream channels.

## DEM RATING

WATER STORAGE	<u>3</u>	X	4	=	<u>12</u>
BANK, SHORELINE STABILIZATION	<u>2</u>	X	4	=	<u>8</u>
POLLUTANT REMOVAL	<u>3</u> *	X	5	=	<u>15</u>
WILDLIFE HABITAT	<u>3</u>	X	2	=	<u>6</u>
AQUATIC LIFE HABITAT	<u>2</u>	X	4	=	<u>8</u>
RECREATION/EDUCATION	<u>2</u>	X	1	=	<u>2</u>
TOTAL WETLAND SCORE =					<u>51</u>

\* Add one point if in sensitive watershed and &gt;10% nonpoint disturbance within 1/2 mile upstream, upslope, or radius.



# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

WDE

Project/Site: Triangle Expressway (A8) City/County: Wake Sampling Date: 6/9/2010  
 Applicant/Owner: N.C. Turnpike Authority State: NC Sampling Point: A8WE103  
 Investigator(s): Wendee B. Smith, Mulkey, Inc. Section, Township, Range: Williams Crossroads  
 Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none  
 Slope (%): 0 - 2 Lat: 35.636018 Long: -78.650345 Datum: NAD 83  
 Soil Map Unit Name: Rains fine sandy loam NWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:  NCWAM - Bottomland Hardwood Forest	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>10</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

**VEGETATION – Use scientific names of plants.**

 Sampling Point: A8WE103

Tree Stratum (Plot size: <u>30 ft radius</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Pinus taeda</i>	60	<input checked="" type="checkbox"/>	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A)  Total Number of Dominant Species Across All Strata: <u>7</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <i>Liriodendron tulipifera</i>	60	<input checked="" type="checkbox"/>	FAC	
3. <i>Ilex opaca</i>	15	<input type="checkbox"/>	FAC	
4. <i>Liquidambar styraciflua</i>	15	<input type="checkbox"/>	FAC	
5. _____		<input type="checkbox"/>		
6. _____		<input type="checkbox"/>		
7. _____		<input type="checkbox"/>		
150 = Total Cover				
Sapling Stratum (Plot size: <u>15 ft radius</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Liquidambar styraciflua</i>	25	<input checked="" type="checkbox"/>	FAC	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
2. <i>Pinus taeda</i>	10	<input checked="" type="checkbox"/>	FAC	
3. <i>Juniperus virginiana</i>	5	<input type="checkbox"/>	FAC	
4. _____		<input type="checkbox"/>		
5. _____		<input type="checkbox"/>		
6. _____		<input type="checkbox"/>		
7. _____		<input type="checkbox"/>		
40 = Total Cover				
Shrub Stratum (Plot size: <u>15 ft radius</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Vaccinium corymbosum</i>	15	<input checked="" type="checkbox"/>	FACW	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <i>Arundinaria gigantea</i>	10	<input checked="" type="checkbox"/>	FACW	
3. <i>Magnolia virginiana</i>	5	<input type="checkbox"/>	FACW	
4. _____		<input type="checkbox"/>		
5. _____		<input type="checkbox"/>		
6. _____		<input type="checkbox"/>		
7. _____		<input type="checkbox"/>		
30 = Total Cover				
Herb Stratum (Plot size: <u>5 ft radius</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Osmunda cinnamomea</i>	10	<input checked="" type="checkbox"/>	FACW	<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  <b>Woody vine</b> – All woody vines, regardless of height.
2. <i>Carex sp.</i>	15	<input type="checkbox"/>		
3. _____		<input type="checkbox"/>		
4. _____		<input type="checkbox"/>		
5. _____		<input type="checkbox"/>		
6. _____		<input type="checkbox"/>		
7. _____		<input type="checkbox"/>		
8. _____		<input type="checkbox"/>		
9. _____		<input type="checkbox"/>		
10. _____		<input type="checkbox"/>		
11. _____		<input type="checkbox"/>		
12. _____		<input type="checkbox"/>		
25 = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft radius</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____		<input type="checkbox"/>		<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____		<input type="checkbox"/>		
3. _____		<input type="checkbox"/>		
4. _____		<input type="checkbox"/>		
5. _____		<input type="checkbox"/>		
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				



Sampling Point: A8WE103

Sampling Point: A8WE103

[illegible]

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

☐ 2 cm Muck (A10) **(MLRA 147)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

WDE

Project/Site: Triangle Expressway (A8) City/County: Wake Sampling Date: 6/9/2010  
 Applicant/Owner: N.C. Turnpike Authority State: NC Sampling Point: A8WEUP103  
 Investigator(s): Wendee B. Smith, Mulkey, Inc. Section, Township, Range: Williams Crossroads  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none  
 Slope (%): 0 - 2 Lat: 35.636128 Long: -78.650343 Datum: NAD 83  
 Soil Map Unit Name: Rains fine sandy loam NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			



**VEGETATION** – Use scientific names of plants.

 Sampling Point: A8WEUP103

Tree Stratum (Plot size: <u>30 ft radius</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Pinus taeda</i>	90	<input checked="" type="checkbox"/>	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A)  Total Number of Dominant Species Across All Strata: <u>6</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <i>Liriodendron tulipifera</i>	15	<input type="checkbox"/>	FAC	
3.		<input type="checkbox"/>		
4.		<input type="checkbox"/>		
5.		<input type="checkbox"/>		
6.		<input type="checkbox"/>		
7.		<input type="checkbox"/>		
		105 = Total Cover		<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
<b>Sapling Stratum (Plot size: <u>15 ft radius</u> )</b>				
1. <i>Liquidambar styraciflua</i>	65	<input checked="" type="checkbox"/>	FAC	
2. <i>Oxydendron arboreum</i>	5	<input type="checkbox"/>	FACU	
3.		<input type="checkbox"/>		
4.		<input type="checkbox"/>		
5.		<input type="checkbox"/>		
		70 = Total Cover		
<b>Shrub Stratum (Plot size: <u>15 ft radius</u> )</b>				
1. <i>Persea palustris</i>	20	<input checked="" type="checkbox"/>	FACW	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <i>Liquidambar styraciflua</i>	15	<input checked="" type="checkbox"/>	FAC	
3. <i>Arundinaria gigantea</i>	10	<input checked="" type="checkbox"/>	FACW	
4.		<input type="checkbox"/>		
5.		<input type="checkbox"/>		
6.		<input type="checkbox"/>		
7.		<input type="checkbox"/>		
		45 = Total Cover		
<b>Herb Stratum (Plot size: <u>5 ft radius</u> )</b>				
1. <i>Smilax rotundifolia</i>	2	<input checked="" type="checkbox"/>	FAC	<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  <b>Woody vine</b> – All woody vines, regardless of height.
2.		<input type="checkbox"/>		
3.		<input type="checkbox"/>		
4.		<input type="checkbox"/>		
5.		<input type="checkbox"/>		
6.		<input type="checkbox"/>		
7.		<input type="checkbox"/>		
8.		<input type="checkbox"/>		
9.		<input type="checkbox"/>		
10.		<input type="checkbox"/>		
11.		<input type="checkbox"/>		
12.		<input type="checkbox"/>		
		2 = Total Cover		
<b>Woody Vine Stratum (Plot size: <u>15 ft radius</u> )</b>				
1.		<input type="checkbox"/>		
2.		<input type="checkbox"/>		
3.		<input type="checkbox"/>		
4.		<input type="checkbox"/>		
5.		<input type="checkbox"/>		
		_____ = Total Cover		
Remarks: (Include photo numbers here or on a separate sheet.)				

**Hydrophytic Vegetation Present?** Yes ☒ No ☐

## SOIL

Sampling Point: A8WEUP103

[illegible]



WDE

## WETLAND RATING WORKSHEET (4th VERSION)

Project Name:	<u>Triangle Expressway (A8)</u>	County:	<u>Wake</u>
Nearest Road:	<u>Holland Church Road</u>	Date:	<u>6/9/2010</u>
Wetland Area (ac):	<u>28acres</u>	Wetland Width (ft):	<u>350ft</u>
Name of Evaluator(s):	<u>Wendee B. Smith, Mulkey, Inc.</u>		

WETLAND LOCATION: A8WE103

☐ on sound or estuary, pond or lake  
☒ on perennial stream  
☐ on intermittent stream  
☐ within interstream divide  
☐ other \_\_\_\_\_

## SOILS:

Soil Series: Rains fine sandy loam  
☐ predominantly organic (humus, muck or peat)  
☒ predominantly mineral (non-sandy)  
☐ predominantly sandy

## HYDRAULIC FACTORS:

☐ freshwater  
☐ brackish  
☐ steep topography  
☐ ditched or channelized  
☒ total wetland width  $\geq$  100 feet

## ADJACENT LAND USE:

(within 1/2 mile upstream, upslope or radius)  
☒ forested/natural vegetation 80 %  
☒ agricultural/urbanized 20 %  
☐ impervious surface \_\_\_\_\_ %  
 Adjacent Special Natural Areas \_\_\_\_\_

## DOMINANT VEGETATION:

1 Liriodendron tulipifera  
 2 Liquidambar styraciflua  
 3 Arundinaria gigantea  
 4 Juncus effusus

## FLOODING AND WETNESS:

☐ semipermanently to permanently flooded or inundated  
☐ seasonally flooded or inundated  
☒ intermittently flooded or temporary surface water  
☐ no evidence of flooding or surface water

## WETLAND TYPE: (select one)\*

<input checked="" type="checkbox"/> Bottomland Hardwood Forest	<input type="checkbox"/> Bog/Fen
<input type="checkbox"/> Swamp Forest	<input type="checkbox"/> Headwater Forest
<input type="checkbox"/> Carolina Bay	<input type="checkbox"/> Bog Forest
<input type="checkbox"/> Pocosin	<input type="checkbox"/> Ephemeral Wetland
<input type="checkbox"/> Pine Savannah	<input type="checkbox"/> Other: _____
<input type="checkbox"/> Freshwater Marsh	

\* The rating system cannot be applied to salt and brackish marshes or stream channels.

## DEM RATING

WATER STORAGE	<u>4</u>	X	<u>4</u>	=	<u>16</u>
BANK, SHORELINE STABILIZATION	<u>1</u>	X	<u>4</u>	=	<u>4</u>
POLLUTANT REMOVAL	<u>2</u> *	X	<u>5</u>	=	<u>10</u>
WILDLIFE HABITAT	<u>4</u>	X	<u>2</u>	=	<u>8</u>
AQUATIC LIFE HABITAT	<u>4</u>	X	<u>4</u>	=	<u>16</u>
RECREATION/EDUCATION	<u>2</u>	X	<u>1</u>	=	<u>2</u>
TOTAL WETLAND SCORE =					<u>56</u>

\* Add one point if in sensitive watershed and  $>10\%$  nonpoint disturbance within 1/2 mile upstream, upslope, or radius.

# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/14/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WVX-WET  
 Investigator(s): J. Tisdale, S. Easterly, J. Garvey Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): flat Local relief (concave, convex, none): concave Slope (%): <1  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.687571 Long: 35.687571 Datum: NAD83  
 Soil Map Unit Name: CtC - Creedmoor silt loam, 6 to 10 percent slopes NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes <u>X</u>	No _____	
Remarks: Wetland with problematic soils.			

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ True Aquatic Plants (B14) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) _____ Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <u>X</u> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks: Saturated top 1" due to rain. This area is catching water from 540 fillslopes. Drains into SSF.		



**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WVX-WET

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)  Total Number of Dominant Species Across All Strata: <u>4</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
=Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>70</u></td> <td>x 1 = <u>70</u></td> </tr> <tr> <td>FACW species <u>105</u></td> <td>x 2 = <u>210</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>10</u></td> <td>x 4 = <u>40</u></td> </tr> <tr> <td>UPL species <u>20</u></td> <td>x 5 = <u>100</u></td> </tr> <tr> <td>Column Totals: <u>215</u> (A)</td> <td><u>450</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.09</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>70</u>	x 1 = <u>70</u>	FACW species <u>105</u>	x 2 = <u>210</u>	FAC species <u>10</u>	x 3 = <u>30</u>	FACU species <u>10</u>	x 4 = <u>40</u>	UPL species <u>20</u>	x 5 = <u>100</u>	Column Totals: <u>215</u> (A)	<u>450</u> (B)	Prevalence Index = B/A = <u>2.09</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>70</u>	x 1 = <u>70</u>																			
FACW species <u>105</u>	x 2 = <u>210</u>																			
FAC species <u>10</u>	x 3 = <u>30</u>																			
FACU species <u>10</u>	x 4 = <u>40</u>																			
UPL species <u>20</u>	x 5 = <u>100</u>																			
Column Totals: <u>215</u> (A)	<u>450</u> (B)																			
Prevalence Index = B/A = <u>2.09</u>																				
50% of total cover: _____ 20% of total cover: _____																				
<b>Sapling/Shrub Stratum (Plot size: <u>30' r</u>)</b>																				
1. <u>Salix nigra</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>X</u> <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  <u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
2. <u>Baccharis halimifolia</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
40 =Total Cover																				
50% of total cover: <u>20</u> 20% of total cover: <u>8</u>																				
<b>Herb Stratum (Plot size: <u>15' r</u>)</b>																				
1. <u>Juncus effusus</u>	<u>60</u>	<u>Yes</u>	<u>FACW</u>	<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
2. <u>Carex lurida</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>																	
3. <u>Typha latifolia</u>	<u>20</u>	<u>No</u>	<u>OBL</u>																	
4. <u>Scirpus cyperinus</u>	<u>20</u>	<u>No</u>	<u>FACW</u>																	
5. <u>Heterotheca subaxillaris</u>	<u>20</u>	<u>No</u>	<u>UPL</u>																	
6. <u>Rubus argutus</u>	<u>10</u>	<u>No</u>	<u>FACU</u>																	
7. <u>Platanus occidentalis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>																	
8. <u>Microstegium vimineum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>																	
9. <u>Liquidambar styraciflua</u>	<u>5</u>	<u>No</u>	<u>FAC</u>																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
175 =Total Cover																				
50% of total cover: <u>88</u> 20% of total cover: <u>35</u>																				
<b>Woody Vine Stratum (Plot size: _____)</b>																				
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
=Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

## SOIL

Sampling Point: WVX-WET**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-2	5yr 4/4	90	5yr 5/2	10	C	M	Loamy/Clayey	Distinct redox concentrations
2-14	2.5yr 4/2	80	10yr 7/8	20	C	M	Loamy/Clayey	Prominent redox concentrations

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) <b>(MLRA 136)</b>
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 2 cm Muck (A10) <b>(LRR N)</b>	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b>
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) <b>(MLRA 122, 136)</b>
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) <b>(MLRA 127, 147, 148)</b>
<input type="checkbox"/> Dark Surface (S7)	

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> 2 cm Muck (A10) <b>(MLRA 147)</b>
<input type="checkbox"/> Coast Prairie Redox (A16) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 136, 147)</b>
<input type="checkbox"/> Red Parent Material (F21) <b>(outside MLRA 127, 147, 148)</b>
<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_Hydric Soil Present? Yes ☒ No ☐**Remarks:**

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

Wetland problematic soils appear to be influenced from past road construction. Currently functioning as a wetland, hard packed soils, with wetland vegetation.



# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/14/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WVX-UP  
 Investigator(s): J. Tisdale, S. Easterly, J. Garvey Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): flat Local relief (concave, convex, none): convex Slope (%): 1  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.687497 Long: -78.84928 Datum: NAD83  
 Soil Map Unit Name: CtC - Creedmoor silt loam, 6 to 10 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Remarks:	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ True Aquatic Plants (B14) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) _____ Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WVX-UP

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Liriodendron tulipifera</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A) Total Number of Dominant Species Across All Strata: <u>13</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>53.8%</u> (A/B)																
2. <u>Carpinus caroliniana</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Quercus rubra</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>																	
4. <u>Nyssa sylvatica</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																	
5. <u>Quercus alba</u>	<u>10</u>	<u>No</u>	<u>FACU</u>																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
100 =Total Cover																				
50% of total cover: <u>50</u>		20% of total cover: <u>20</u>																		
<b>Sapling/Shrub Stratum (Plot size: <u>30' r</u> )</b>																				
1. <u>Pinus taeda</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>20</u></td> <td>x 2 = <u>40</u></td> </tr> <tr> <td>FAC species <u>120</u></td> <td>x 3 = <u>360</u></td> </tr> <tr> <td>FACU species <u>100</u></td> <td>x 4 = <u>400</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>240</u> (A)</td> <td><u>800</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.33</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>20</u>	x 2 = <u>40</u>	FAC species <u>120</u>	x 3 = <u>360</u>	FACU species <u>100</u>	x 4 = <u>400</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>240</u> (A)	<u>800</u> (B)	Prevalence Index = B/A = <u>3.33</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>20</u>	x 2 = <u>40</u>																			
FAC species <u>120</u>	x 3 = <u>360</u>																			
FACU species <u>100</u>	x 4 = <u>400</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>240</u> (A)	<u>800</u> (B)																			
Prevalence Index = B/A = <u>3.33</u>																				
2. <u>Ilex opaca</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Acer rubrum</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
40 =Total Cover																				
50% of total cover: <u>20</u>		20% of total cover: <u>8</u>																		
<b>Herb Stratum (Plot size: <u>15' r</u> )</b>																				
1. <u>Microstegium vimineum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Osmundastrum cinnamomeum</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>																	
3. <u>Parthenocissus quinquefolia</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
4. <u>Hamamelis virginiana</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
5. <u>Vitis rotundifolia</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
6. <u>Acer rubrum</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
7. <u>Quercus alba</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
100 =Total Cover																				
50% of total cover: <u>50</u>		20% of total cover: <u>20</u>																		
<b>Woody Vine Stratum (Plot size: _____ )</b>																				
1. _____	_____	_____	_____	<b>Definitions of Four Vegetation Strata:</b> <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ =Total Cover																				
50% of total cover: _____		20% of total cover: _____																		
Remarks: (Include photo numbers here or on a separate sheet.)																				



## SOIL

Sampling Point: WVX-UP**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-2	10yr 4/4	100					Loamy/Clayey	
2-14	10yr 6/6	100					Loamy/Clayey	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

☐ Histosol (A1)  
☐ Histic Epipedon (A2)  
☐ Black Histic (A3)  
☐ Hydrogen Sulfide (A4)  
☐ Stratified Layers (A5)  
☐ 2 cm Muck (A10) (**LRR N**)  
☐ Depleted Below Dark Surface (A11)  
☐ Thick Dark Surface (A12)  
☐ Sandy Mucky Mineral (S1)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Dark Surface (S7)

☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)  
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)  
☐ Loamy Mucky Mineral (F1) (**MLRA 136**)  
☐ Loamy Gleyed Matrix (F2)  
☐ Depleted Matrix (F3)  
☐ Redox Dark Surface (F6)  
☐ Depleted Dark Surface (F7)  
☐ Redox Depressions (F8)  
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)  
☐ Umbric Surface (F13) (**MLRA 122, 136**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)  
☐ Red Parent Material (F21) (**MLRA 127, 147, 148**)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16) (**MLRA 147, 148**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)  
☐ Red Parent Material (F21) (**outside MLRA 127, 147, 148**)  
☐ Very Shallow Dark Surface (F22)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No X

**Remarks:**

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.  
 Soil very friable.

# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/14/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WVZ-WET  
 Investigator(s): J. Tisdale, J. Garvey Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): <1  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.68862 Long: -78.845508 Datum: NAD83  
 Soil Map Unit Name: CtC - Creedmoor silt loam, 6 to 10 percent slopes NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____
Remarks: Linear wetland, drainage pattern.	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>6</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks:	



**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WVZ-WET

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)  Total Number of Dominant Species Across All Strata: <u>3</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
=Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>100</u></td> <td>x 1 = <u>100</u></td> </tr> <tr> <td>FACW species <u>15</u></td> <td>x 2 = <u>30</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>115</u> (A)</td> <td><u>130</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>1.13</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>100</u>	x 1 = <u>100</u>	FACW species <u>15</u>	x 2 = <u>30</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>115</u> (A)	<u>130</u> (B)	Prevalence Index = B/A = <u>1.13</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>100</u>	x 1 = <u>100</u>																			
FACW species <u>15</u>	x 2 = <u>30</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>115</u> (A)	<u>130</u> (B)																			
Prevalence Index = B/A = <u>1.13</u>																				
50% of total cover: _____ 20% of total cover: _____																				
Sapling/Shrub Stratum (Plot size: _____)																				
1. <u>Salix nigra</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>																	
2. <u>Baccharis halimifolia</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
=Total Cover																				
50% of total cover: <u>13</u> 20% of total cover: <u>5</u>																				
Herb Stratum (Plot size: _____)																				
1. <u>Typha latifolia</u>	<u>80</u>	<u>Yes</u>	<u>OBL</u>																	
2. <u>Juncus effusus</u>	<u>10</u>	<u>No</u>	<u>FACW</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
=Total Cover																				
50% of total cover: <u>45</u> 20% of total cover: <u>18</u>																				
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
=Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

**Hydrophytic Vegetation Present?**    Yes X    No \_\_\_\_\_

## SOIL

Sampling Point: WVZ-WET**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-2	7.5yr 3/4						Loamy/Clayey	
2-6	2.5y 3/1						Sandy	
6-14	10yr 6/6						Loamy/Clayey	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

☐ Histosol (A1)  
☐ Histic Epipedon (A2)  
☐ Black Histic (A3)  
☐ Hydrogen Sulfide (A4)  
☐ Stratified Layers (A5)  
☐ 2 cm Muck (A10) (**LRR N**)  
☐ Depleted Below Dark Surface (A11)  
☐ Thick Dark Surface (A12)  
☐ Sandy Mucky Mineral (S1)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Dark Surface (S7)

☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)  
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)  
☐ Loamy Mucky Mineral (F1) (**MLRA 136**)  
☐ Loamy Gleyed Matrix (F2)  
☒ Depleted Matrix (F3)  
☐ Redox Dark Surface (F6)  
☐ Depleted Dark Surface (F7)  
☐ Redox Depressions (F8)  
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)  
☐ Umbric Surface (F13) (**MLRA 122, 136**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)  
☐ Red Parent Material (F21) (**MLRA 127, 147, 148**)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16) (**MLRA 147, 148**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)  
☐ Red Parent Material (F21) (**outside MLRA 127, 147, 148**)  
☐ Very Shallow Dark Surface (F22)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

**Remarks:**

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.



# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/14/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WVZ-UP  
 Investigator(s): J. Tisdale, J. Garvey Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.688612 Long: -78.845417 Datum: NAD83  
 Soil Map Unit Name: CtC - Creedmoor silt loam, 6 to 10 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Remarks:	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ True Aquatic Plants (B14) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) _____ Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WVZ-UP

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)  Total Number of Dominant Species Across All Strata: <u>4</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
=Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>40</u></td> <td>x 2 = <u>80</u></td> </tr> <tr> <td>FAC species <u>40</u></td> <td>x 3 = <u>120</u></td> </tr> <tr> <td>FACU species <u>60</u></td> <td>x 4 = <u>240</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>140</u> (A)</td> <td><u>440</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.14</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>40</u>	x 2 = <u>80</u>	FAC species <u>40</u>	x 3 = <u>120</u>	FACU species <u>60</u>	x 4 = <u>240</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>140</u> (A)	<u>440</u> (B)	Prevalence Index = B/A = <u>3.14</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>40</u>	x 2 = <u>80</u>																			
FAC species <u>40</u>	x 3 = <u>120</u>																			
FACU species <u>60</u>	x 4 = <u>240</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>140</u> (A)	<u>440</u> (B)																			
Prevalence Index = B/A = <u>3.14</u>																				
50% of total cover: _____			20% of total cover: _____																	
<b>Sapling/Shrub Stratum (Plot size: <u>30' r</u>)</b>																				
1. <u>Baccharis halimifolia</u>	<u>40</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u>Pinus taeda</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
60 =Total Cover																				
50% of total cover: <u>30</u>			20% of total cover: <u>12</u>																	
<b>Herb Stratum (Plot size: <u>15' r</u>)</b>																				
1. <u>Lespedeza cuneata</u>	<u>60</u>	<u>Yes</u>	<u>FACU</u>																	
2. <u>Pinus taeda</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
80 =Total Cover																				
50% of total cover: <u>40</u>			20% of total cover: <u>16</u>																	
<b>Woody Vine Stratum (Plot size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
=Total Cover																				
50% of total cover: _____			20% of total cover: _____																	
Remarks: (Include photo numbers here or on a separate sheet.)																				

**Hydrophytic Vegetation Indicators:**  
 \_\_\_\_\_ 1 - Rapid Test for Hydrophytic Vegetation  
☒ 2 - Dominance Test is >50%  
 \_\_\_\_\_ 3 - Prevalence Index is ≤3.0<sup>1</sup>  
 \_\_\_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 \_\_\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)  
  
<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Four Vegetation Strata:**  
  
**Tree** – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  
  
**Sapling/Shrub** – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  
  
**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  
  
**Woody Vine** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?**      Yes ☒      No \_\_\_\_\_



## SOIL

Sampling Point: WVZ-UP**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-14	10yr 5/6	100						

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

☐ Histosol (A1)  
☐ Histic Epipedon (A2)  
☐ Black Histic (A3)  
☐ Hydrogen Sulfide (A4)  
☐ Stratified Layers (A5)  
☐ 2 cm Muck (A10) (**LRR N**)  
☐ Depleted Below Dark Surface (A11)  
☐ Thick Dark Surface (A12)  
☐ Sandy Mucky Mineral (S1)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Dark Surface (S7)

☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)  
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)  
☐ Loamy Mucky Mineral (F1) (**MLRA 136**)  
☐ Loamy Gleyed Matrix (F2)  
☐ Depleted Matrix (F3)  
☐ Redox Dark Surface (F6)  
☐ Depleted Dark Surface (F7)  
☐ Redox Depressions (F8)  
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)  
☐ Umbric Surface (F13) (**MLRA 122, 136**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)  
☐ Red Parent Material (F21) (**MLRA 127, 147, 148**)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16)  
☐ (**MLRA 147, 148**)  
☐ Piedmont Floodplain Soils (F19)  
☐ (**MLRA 136, 147**)  
☐ Red Parent Material (F21)  
☐ (**outside MLRA 127, 147, 148**)  
☐ Very Shallow Dark Surface (F22)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No X

**Remarks:**

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/14/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WWB-WET  
 Investigator(s): J. Tisdale, J. Garvey Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.687681 Long: -78.845927 Datum: NAD83  
 Soil Map Unit Name: CrE - Creedmoor sandy loam, 10 to 20 percent slopes NWI classification: PEM  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____
Remarks: Cattail wetland above eph drainage pipe, problematic soils	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ True Aquatic Plants (B14) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) _____ Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <u>X</u> Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <u>X</u> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks: Drainage patterns coming in, connects to roadway pipe. Does not appear to be a stormwater feature	



**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WWB-WET

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Salix nigra</u>	<u>10</u>	<u>Yes</u>	<u>OBL</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
10 = Total Cover																				
50% of total cover: <u>5</u>		20% of total cover: <u>2</u>																		
<b>Sapling/Shrub Stratum (Plot size: <u>30' r</u>)</b>																				
1. <u>Pinus taeda</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <th style="text-align: left;">Total % Cover of:</th> <th style="text-align: left;">Multiply by:</th> </tr> <tr> <td>OBL species <u>90</u></td> <td>x 1 = <u>90</u></td> </tr> <tr> <td>FACW species <u>30</u></td> <td>x 2 = <u>60</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>5</u></td> <td>x 4 = <u>20</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>135</u> (A)</td> <td><u>200</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>1.48</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>90</u>	x 1 = <u>90</u>	FACW species <u>30</u>	x 2 = <u>60</u>	FAC species <u>10</u>	x 3 = <u>30</u>	FACU species <u>5</u>	x 4 = <u>20</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>135</u> (A)	<u>200</u> (B)	Prevalence Index = B/A = <u>1.48</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>90</u>	x 1 = <u>90</u>																			
FACW species <u>30</u>	x 2 = <u>60</u>																			
FAC species <u>10</u>	x 3 = <u>30</u>																			
FACU species <u>5</u>	x 4 = <u>20</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>135</u> (A)	<u>200</u> (B)																			
Prevalence Index = B/A = <u>1.48</u>																				
2. <u>Quercus alba</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Baccharis halimifolia</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
15 = Total Cover																				
50% of total cover: <u>8</u>		20% of total cover: <u>3</u>																		
<b>Herb Stratum (Plot size: <u>15' r</u>)</b>																				
1. <u>Typha latifolia</u>	<u>80</u>	<u>Yes</u>	<u>OBL</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>X</u> <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>  </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Persicaria maculosa</u>	<u>15</u>	<u>No</u>	<u>FACW</u>																	
3. <u>Juncus effusus</u>	<u>10</u>	<u>No</u>	<u>FACW</u>																	
4. <u>Acer rubrum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
110 = Total Cover																				
50% of total cover: <u>55</u>		20% of total cover: <u>22</u>																		
<b>Woody Vine Stratum (Plot size: _____)</b>																				
1. _____	_____	_____	_____	<b>Definitions of Four Vegetation Strata:</b> <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____		20% of total cover: _____																		
Remarks: (Include photo numbers here or on a separate sheet.)																				

## SOIL

Sampling Point: WWB-WET**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-2	7.5yr 3/2	100					Loamy/Clayey	
2-10	5yr 4/3	80	10yr 5/1	20	D	M	Loamy/Clayey	
10-14	2.5yr 6/4	80	2.5y 5/1	20	D	M	Loamy/Clayey	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) <b>(MLRA 136)</b>
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 2 cm Muck (A10) <b>(LRR N)</b>	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b>
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) <b>(MLRA 122, 136)</b>
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) <b>(MLRA 127, 147, 148)</b>
<input type="checkbox"/> Dark Surface (S7)	

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> 2 cm Muck (A10) <b>(MLRA 147)</b>
<input type="checkbox"/> Coast Prairie Redox (A16) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 136, 147)</b>
<input type="checkbox"/> Red Parent Material (F21) <b>(outside MLRA 127, 147, 148)</b>
<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input checked="" type="checkbox"/> Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_
Hydric Soil Present? Yes ☒ No ☐**Remarks:**

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

Problematic: Due to the fill slope of the adjoining property the soil is aggregating in the area of the wetland



# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/14/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WWB-UPL  
 Investigator(s): J. Tisdale, J. Garvey Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): <1  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.687686 Long: -78.845976 Datum: NAD83  
 Soil Map Unit Name: CrE - Creedmoor sandy loam, 10 to 20 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Remarks:	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ True Aquatic Plants (B14) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) _____ Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WWB-UPL

Tree Stratum (Plot size: <u>30</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u><i>Pinus taeda</i></u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
20 = Total Cover				<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>30</u></td> <td>x 2 = <u>60</u></td> </tr> <tr> <td>FAC species <u>20</u></td> <td>x 3 = <u>60</u></td> </tr> <tr> <td>FACU species <u>5</u></td> <td>x 4 = <u>20</u></td> </tr> <tr> <td>UPL species <u>80</u></td> <td>x 5 = <u>400</u></td> </tr> <tr> <td>Column Totals: <u>135</u> (A)</td> <td><u>540</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>4.00</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>30</u>	x 2 = <u>60</u>	FAC species <u>20</u>	x 3 = <u>60</u>	FACU species <u>5</u>	x 4 = <u>20</u>	UPL species <u>80</u>	x 5 = <u>400</u>	Column Totals: <u>135</u> (A)	<u>540</u> (B)	Prevalence Index = B/A = <u>4.00</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>30</u>	x 2 = <u>60</u>																			
FAC species <u>20</u>	x 3 = <u>60</u>																			
FACU species <u>5</u>	x 4 = <u>20</u>																			
UPL species <u>80</u>	x 5 = <u>400</u>																			
Column Totals: <u>135</u> (A)	<u>540</u> (B)																			
Prevalence Index = B/A = <u>4.00</u>																				
50% of total cover: <u>10</u> 20% of total cover: <u>4</u>																				
<b>Sapling/Shrub Stratum (Plot size: <u>30</u> )</b>																				
1. <u><i>Baccharis halimifolia</i></u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)</u> <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
20 = Total Cover																				
50% of total cover: <u>10</u> 20% of total cover: <u>4</u>																				
<b>Herb Stratum (Plot size: <u>15</u> )</b>																				
1. <u><i>Festuca trachyphylla</i></u>	<u>80</u>	<u>Yes</u>	<u>UPL</u>	<b>Definitions of Four Vegetation Strata:</b> <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
2. <u><i>Persicaria maculosa</i></u>	<u>10</u>	<u>No</u>	<u>FACW</u>																	
3. <u><i>Lonicera japonica</i></u>	<u>5</u>	<u>No</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
95 = Total Cover																				
50% of total cover: <u>48</u> 20% of total cover: <u>19</u>																				
<b>Woody Vine Stratum (Plot size: _____ )</b>																				
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____      20% of total cover: _____																				
Remarks: (Include photo numbers here or on a separate sheet.)																				



## SOIL

Sampling Point: WWB-UPL**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-8	2.5yr 4/4	100					Loamy/Clayey	
8-14	7.5yr 5/6	100					Loamy/Clayey	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

☐ Histosol (A1)  
☐ Histic Epipedon (A2)  
☐ Black Histic (A3)  
☐ Hydrogen Sulfide (A4)  
☐ Stratified Layers (A5)  
☐ 2 cm Muck (A10) (**LRR N**)  
☐ Depleted Below Dark Surface (A11)  
☐ Thick Dark Surface (A12)  
☐ Sandy Mucky Mineral (S1)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Dark Surface (S7)

☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)  
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)  
☐ Loamy Mucky Mineral (F1) (**MLRA 136**)  
☐ Loamy Gleyed Matrix (F2)  
☐ Depleted Matrix (F3)  
☐ Redox Dark Surface (F6)  
☐ Depleted Dark Surface (F7)  
☐ Redox Depressions (F8)  
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)  
☐ Umbric Surface (F13) (**MLRA 122, 136**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)  
☐ Red Parent Material (F21) (**MLRA 127, 147, 148**)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16) (**MLRA 147, 148**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)  
☐ Red Parent Material (F21) (**outside MLRA 127, 147, 148**)  
☐ Very Shallow Dark Surface (F22)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No X

**Remarks:**

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/15/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WWC-WET  
 Investigator(s): J. Tisdale, J. Garvey Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): slope Slope (%): 15  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.689055 Long: -78.841916 Datum: NAD83  
 Soil Map Unit Name: CrE - Creedmoor sandy loam, 10 to 20 percent slopes NWI classification: PEM  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland?	Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u> No _____		
Wetland Hydrology Present?	Yes <u>X</u> No _____		
Remarks: Hillslope wetland/seep - inside on-ramp			

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ True Aquatic Plants (B14) <u>X</u> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <u>X</u> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> <u>X</u> Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)	
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>5</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>6</u> (includes capillary fringe)		<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Appears to be perched but also could be Triassic basin hydrology			



**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WWC-WET

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
=Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>60</u></td> <td>x 1 = <u>60</u></td> </tr> <tr> <td>FACW species <u>10</u></td> <td>x 2 = <u>20</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>40</u></td> <td>x 5 = <u>200</u></td> </tr> <tr> <td>Column Totals: <u>110</u> (A)</td> <td><u>280</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.55</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>60</u>	x 1 = <u>60</u>	FACW species <u>10</u>	x 2 = <u>20</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>40</u>	x 5 = <u>200</u>	Column Totals: <u>110</u> (A)	<u>280</u> (B)	Prevalence Index = B/A = <u>2.55</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>60</u>	x 1 = <u>60</u>																			
FACW species <u>10</u>	x 2 = <u>20</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>40</u>	x 5 = <u>200</u>																			
Column Totals: <u>110</u> (A)	<u>280</u> (B)																			
Prevalence Index = B/A = <u>2.55</u>																				
50% of total cover: _____ 20% of total cover: _____																				
Sapling/Shrub Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
=Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Herb Stratum (Plot size: <u>15'</u> )																				
1. <u>Typha latifolia</u>	<u>60</u>	<u>Yes</u>	<u>OBL</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>X</u> <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  <u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Festuca trachyphylla</u>	<u>40</u>	<u>Yes</u>	<u>UPL</u>																	
3. <u>Baccharis halimifolia</u>	<u>10</u>	<u>No</u>	<u>FACW</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
<u>110</u> =Total Cover																				
50% of total cover: <u>55</u> 20% of total cover: <u>22</u>																				
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
=Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

**Definitions of Four Vegetation Strata:**  
  
**Tree** – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  
  
**Sapling/Shrub** – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  
  
**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  
  
**Woody Vine** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?**      Yes X      No \_\_\_\_\_

## SOIL

Sampling Point: WWC-WET**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-8	2.5yr 4/1	90	2.5yr 4/3	10	C	M	Loamy/Clayey	Distinct redox concentrations
8-14	2.5y 6/6	60	2.5y 6/2	40	C	M	Loamy/Clayey	Two color matrix

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) <b>(MLRA 136)</b>
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 2 cm Muck (A10) <b>(LRR N)</b>	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b>
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) <b>(MLRA 122, 136)</b>
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) <b>(MLRA 127, 147, 148)</b>
<input type="checkbox"/> Dark Surface (S7)	

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> 2 cm Muck (A10) <b>(MLRA 147)</b>
<input type="checkbox"/> Coast Prairie Redox (A16) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 136, 147)</b>
<input type="checkbox"/> Red Parent Material (F21) <b>(outside MLRA 127, 147, 148)</b>
<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_Hydric Soil Present? Yes ☒ No ☐

Remarks:



# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/15/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WWC-UPL  
 Investigator(s): J. Tisdale, J. Garvey Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): slope Slope (%): 15  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.689071 Long: -78.841821 Datum: NAD83  
 Soil Map Unit Name: CrE-Creedmoor sandy loam, 10 to 20 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"> <b>Is the Sampled Area within a Wetland?</b> </td> <td style="width: 40%; padding: 5px;">           Yes _____ No <u>X</u> </td> </tr> </table>	<b>Is the Sampled Area within a Wetland?</b>	Yes _____ No <u>X</u>
<b>Is the Sampled Area within a Wetland?</b>	Yes _____ No <u>X</u>		
Remarks:			

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ True Aquatic Plants (B14) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) _____ Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)		
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> (includes capillary fringe)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"> <b>Wetland Hydrology Present?</b> </td> <td style="width: 40%; padding: 5px;">           Yes _____ No <u>X</u> </td> </tr> </table>	<b>Wetland Hydrology Present?</b>	Yes _____ No <u>X</u>
<b>Wetland Hydrology Present?</b>	Yes _____ No <u>X</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WWC-UPL

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>3</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
=Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>20</u></td> <td>x 2 = <u>40</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>20</u></td> <td>x 4 = <u>80</u></td> </tr> <tr> <td>UPL species <u>50</u></td> <td>x 5 = <u>250</u></td> </tr> <tr> <td>Column Totals: <u>90</u> (A)</td> <td><u>370</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>4.11</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>20</u>	x 2 = <u>40</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>20</u>	x 4 = <u>80</u>	UPL species <u>50</u>	x 5 = <u>250</u>	Column Totals: <u>90</u> (A)	<u>370</u> (B)	Prevalence Index = B/A = <u>4.11</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>20</u>	x 2 = <u>40</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>20</u>	x 4 = <u>80</u>																			
UPL species <u>50</u>	x 5 = <u>250</u>																			
Column Totals: <u>90</u> (A)	<u>370</u> (B)																			
Prevalence Index = B/A = <u>4.11</u>																				
50% of total cover: _____ 20% of total cover: _____																				
Sapling/Shrub Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
=Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Herb Stratum (Plot size: _____)																				
1. <i>Festuca trachyphylla</i>	50	Yes	UPL	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  <u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <i>Baccharis halimifolia</i>	20	Yes	FACW																	
3. <i>Lespedeza cuneata</i>	20	Yes	FACU																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
90 =Total Cover																				
50% of total cover: <u>45</u> 20% of total cover: <u>18</u>																				
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
=Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

<b>Hydrophytic Vegetation Present?</b>	Yes _____	No <u>X</u>
--	-----------	-------------



## SOIL

Sampling Point: WWC-UPL**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	2.5yr 4/6	100					Loamy/Clayey	
4-14	2.5y 5/6	60	2.5y 7/6	40			Loamy/Clayey	Two color matrix

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

☐ Histosol (A1)  
☐ Histic Epipedon (A2)  
☐ Black Histic (A3)  
☐ Hydrogen Sulfide (A4)  
☐ Stratified Layers (A5)  
☐ 2 cm Muck (A10) (**LRR N**)  
☐ Depleted Below Dark Surface (A11)  
☐ Thick Dark Surface (A12)  
☐ Sandy Mucky Mineral (S1)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Dark Surface (S7)

☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)  
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)  
☐ Loamy Mucky Mineral (F1) (**MLRA 136**)  
☐ Loamy Gleyed Matrix (F2)  
☐ Depleted Matrix (F3)  
☐ Redox Dark Surface (F6)  
☐ Depleted Dark Surface (F7)  
☐ Redox Depressions (F8)  
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)  
☐ Umbric Surface (F13) (**MLRA 122, 136**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)  
☐ Red Parent Material (F21) (**MLRA 127, 147, 148**)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16) (**MLRA 147, 148**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)  
☐ Red Parent Material (F21) (**outside MLRA 127, 147, 148**)  
☐ Very Shallow Dark Surface (F22)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No X

**Remarks:**

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

# WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region

Project/Site: C540 City/County: Wake Sampling Date: 8/15/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WWD-WET  
 Investigator(s): J. Tisdale, J. Garvey Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR or MLRA): LRR P, MLRA 133A Lat: 35.640021 Long: -78.654744 Datum: NAD83  
 Soil Map Unit Name: LyA - Lynchburg sandy loam, 0 to 2 percent slopes NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: Pasture meadow wetland	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Aquatic Fauna (B13) _____ High Water Table (A2) _____ Marl Deposits (B15) ( <b>LRR U</b> ) <u>X</u> Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) <u>X</u> FAC-Neutral Test (D5) _____ Sphagnum Moss (D8) ( <b>LRR T,U</b> )
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>10</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WWD-WET

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)  Total Number of Dominant Species Across All Strata: <u>3</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>70</u></td> <td>x 1 = <u>70</u></td> </tr> <tr> <td>FACW species <u>30</u></td> <td>x 2 = <u>60</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>130</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>1.30</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>70</u>	x 1 = <u>70</u>	FACW species <u>30</u>	x 2 = <u>60</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100</u> (A)	<u>130</u> (B)	Prevalence Index = B/A = <u>1.30</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>70</u>	x 1 = <u>70</u>																			
FACW species <u>30</u>	x 2 = <u>60</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>100</u> (A)	<u>130</u> (B)																			
Prevalence Index = B/A = <u>1.30</u>																				
50% of total cover: _____ 20% of total cover: _____																				
Sapling/Shrub Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Herb Stratum (Plot size: _____)																				
1. <i>Echinochloa crus-galli</i>	30	Yes	FACW	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> <u>2</u> - Dominance Test is >50% <input checked="" type="checkbox"/> <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
2. <i>Juncus effusus</i>	30	Yes	OBL																	
3. <i>Scirpus cyperinus</i>	30	Yes	OBL																	
4. <i>Persicaria punctata</i>	10	No	OBL																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
_____ 100 = Total Cover																				
50% of total cover: <u>50</u> 20% of total cover: <u>20</u>																				
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Remarks: (If observed, list morphological adaptations below.)																				

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Four Vegetation Strata:**

**Tree** – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/Shrub** – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody Vine** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?**

Yes X No \_\_\_\_\_

## SOIL

Sampling Point: WWD-WET

[illegible]

# WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region

Project/Site: C540 City/County: Wake Sampling Date: 8/15/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WWD-UP  
 Investigator(s): J. Tisdale, J. Garvey Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 1  
 Subregion (LRR or MLRA): LRR P, MLRA 133A Lat: 35.639961 Long: -78.654796 Datum: NAD83  
 Soil Map Unit Name: NoB - Norfolk loamy sand, 2 to 6 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
Remarks:			

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Aquatic Fauna (B13) _____ High Water Table (A2) _____ Marl Deposits (B15) <b>(LRR U)</b> _____ Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ FAC-Neutral Test (D5) _____ Sphagnum Moss (D8) <b>(LRR T,U)</b>
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WWD-UP

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Liquidambar styraciflua</u>			FAC	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>4</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25.0%</u> (A/B)  <b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>5</u></td> <td>x 1 = <u>5</u></td> </tr> <tr> <td>FACW species <u>60</u></td> <td>x 2 = <u>120</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>55</u></td> <td>x 4 = <u>220</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>120</u> (A)</td> <td><u>345</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.88</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>5</u>	x 1 = <u>5</u>	FACW species <u>60</u>	x 2 = <u>120</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>55</u>	x 4 = <u>220</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>120</u> (A)	<u>345</u> (B)	Prevalence Index = B/A = <u>2.88</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>5</u>	x 1 = <u>5</u>																			
FACW species <u>60</u>	x 2 = <u>120</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>55</u>	x 4 = <u>220</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>120</u> (A)	<u>345</u> (B)																			
Prevalence Index = B/A = <u>2.88</u>																				
2. <u>Prunus serotina</u>			FACU																	
3. <u>Acer rubrum</u>			FAC																	
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
			<u>        </u> = Total Cover																	
50% of total cover: <u>        </u>			20% of total cover: <u>        </u>																	
<b>Sapling/Shrub Stratum (Plot size: <u>        </u> )</b>																				
1. _____				<b>Hydrophytic Vegetation Indicators:</b> <u>        </u> 1 - Rapid Test for Hydrophytic Vegetation <u>        </u> 2 - Dominance Test is >50% <u>        </u> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <u>        </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
			<u>        </u> = Total Cover																	
50% of total cover: <u>        </u>			20% of total cover: <u>        </u>																	
<b>Herb Stratum (Plot size: <u>15' r</u> )</b>																				
1. <u>Echinochloa crus-galli</u>	<u>60</u>	<u>Yes</u>	<u>FACW</u>	<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.          <b>Hydrophytic Vegetation Present?</b> Yes <u>        </u> No <u>  X  </u>																
2. <u>Amaranthus spinosus</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Juncus effusus</u>	<u>5</u>	<u>No</u>	<u>OBL</u>																	
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
			<u>95</u> = Total Cover																	
50% of total cover: <u>48</u>			20% of total cover: <u>19</u>																	
<b>Woody Vine Stratum (Plot size: <u>30' r</u> )</b>																				
1. <u>Menispermum canadense</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>																	
2. <u>Parthenocissus quinquefolia</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>																	
3. _____																				
4. _____																				
5. _____																				
			<u>25</u> = Total Cover																	
50% of total cover: <u>13</u>			20% of total cover: <u>5</u>																	

Remarks: (If observed, list morphological adaptations below.)

## SOIL

Sampling Point: WWD-UP**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-14	10yr 5/1	90	10yr 6/6	10	C	M	Loamy/Clayey	Prominent redox concentrations

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Thin Dark Surface (S9) <b>(LRR S, T, U)</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Barrier Islands 1 cm Muck (S12)
<input type="checkbox"/> Black Histic (A3)	<b>(MLRA 153B, 153D)</b>
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) <b>(LRR O)</b>
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Organic Bodies (A6) <b>(LRR, P, T, U)</b>	<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) <b>(LRR P, T, U)</b>	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Muck Presence (A8) <b>(LRR U)</b>	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> 1 cm Muck (A9) <b>(LRR P, T)</b>	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Marl (F10) <b>(LRR U)</b>
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Ochric (F11) <b>(MLRA 151)</b>
<input type="checkbox"/> Coast Prairie Redox (A16) <b>(MLRA 150A)</b>	<input type="checkbox"/> Iron-Manganese Masses (F12) <b>(LRR O, P, T)</b>
<input type="checkbox"/> Sandy Mucky Mineral (S1) <b>(LRR O, S)</b>	<input type="checkbox"/> Umbric Surface (F13) <b>(LRR P, T, U)</b>
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Delta Ochric (F17) <b>(MLRA 151)</b>
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Reduced Vertic (F18) <b>(MLRA 150A, 150B)</b>
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 149A)</b>
<input type="checkbox"/> Dark Surface (S7) <b>(LRR P, S, T, U)</b>	<input type="checkbox"/> Anomalous Bright Floodplain Soils (F20)
<input type="checkbox"/> Polyvalue Below Surface (S8)	<b>(MLRA 149A, 153C, 153D)</b>
<b>(LRR S, T, U)</b>	<input type="checkbox"/> Very Shallow Dark Surface (F22)
	<b>(MLRA 138, 152A in FL, 154)</b>

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> 1 cm Muck (A9) <b>(LRR O)</b>
<input type="checkbox"/> 2 cm Muck (A10) <b>(LRR S)</b>
<input type="checkbox"/> Coast Prairie Redox (A16)
<b>(outside MLRA 150A)</b>
<input type="checkbox"/> Reduced Vertic (F18)
<b>(outside MLRA 150A, 150B)</b>
<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(LRR P, T)</b>
<input type="checkbox"/> Anomalous Bright Floodplain Soils (F20)
<b>(MLRA 153B)</b>
<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Very Shallow Dark Surface (F22)
<b>(outside MLRA 138, 152A in FL, 154)</b>
<input type="checkbox"/> Barrier Islands Low Chroma Matrix (TS7)
<b>(MLRA 153B, 153D)</b>
<input type="checkbox"/> Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes X No \_\_\_\_\_

Remarks:

This data sheet is revised from Atlantic and Gulf Coastal Plain Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/15/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WWE-WET  
 Investigator(s): S. Easterly, T. Carter Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 1  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.653325 Long: -78.708683 Datum: NAD83  
 Soil Map Unit Name: CeD - Cecil sandy loam, 10 to 15 percent slopes NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____
Remarks:	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) _____ True Aquatic Plants (B14) <input checked="" type="checkbox"/> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>1</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks: Surface Water in wetland but not where data point taken. Wetland is a linear feature starting at a headcut. Is not a stream, no flow.	



**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WWE-WET

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Liquidambar styraciflua</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A)  Total Number of Dominant Species Across All Strata: <u>8</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>87.5%</u> (A/B)																
2. <u>Acer rubrum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Nyssa sylvatica</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>																	
4. <u>Quercus nigra</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
70 =Total Cover																				
50% of total cover: <u>35</u>		20% of total cover: <u>14</u>																		
<b>Sapling/Shrub Stratum (Plot size: <u>30' r</u> )</b>																				
1. <u>Liquidambar styraciflua</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>40</u></td> <td>x 2 = <u>80</u></td> </tr> <tr> <td>FAC species <u>135</u></td> <td>x 3 = <u>405</u></td> </tr> <tr> <td>FACU species <u>20</u></td> <td>x 4 = <u>80</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>195</u> (A)</td> <td><u>565</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.90</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>40</u>	x 2 = <u>80</u>	FAC species <u>135</u>	x 3 = <u>405</u>	FACU species <u>20</u>	x 4 = <u>80</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>195</u> (A)	<u>565</u> (B)	Prevalence Index = B/A = <u>2.90</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>40</u>	x 2 = <u>80</u>																			
FAC species <u>135</u>	x 3 = <u>405</u>																			
FACU species <u>20</u>	x 4 = <u>80</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>195</u> (A)	<u>565</u> (B)																			
Prevalence Index = B/A = <u>2.90</u>																				
2. <u>Acer rubrum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Quercus nigra</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
50 =Total Cover																				
50% of total cover: <u>25</u>		20% of total cover: <u>10</u>																		
<b>Herb Stratum (Plot size: <u>15' r</u> )</b>																				
1. <u>Osmundastrum cinnamomeum</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>X</u> <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  <u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Polystichum acrostichoides</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Woodwardia areolata</u>	<u>10</u>	<u>No</u>	<u>FACW</u>																	
4. <u>Smilax rotundifolia</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																	
5. <u>Arundinaria gigantea</u>	<u>10</u>	<u>No</u>	<u>FACW</u>																	
6. <u>Quercus nigra</u>	<u>5</u>	<u>No</u>	<u>FAC</u>																	
7. _____	_____	_____	_____																	
75 =Total Cover																				
50% of total cover: <u>38</u>		20% of total cover: <u>15</u>																		
<b>Woody Vine Stratum (Plot size: _____ )</b>																				
1. _____	_____	_____	_____	<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ =Total Cover																				
50% of total cover: _____		20% of total cover: _____																		
Remarks: (Include photo numbers here or on a separate sheet.)																				

## SOIL

Sampling Point: WWE-WET**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-2	10yr 3/1	100					Sandy	
2-10	10yr 4/2	90	5yr 4/4	10	C	M		Prominent redox concentrations
10-14	N 6/	90	5yr 4/6	10	C	M	Loamy/Clayey	Prominent redox concentrations

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) <b>(MLRA 136)</b>
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 2 cm Muck (A10) <b>(LRR N)</b>	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b>
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) <b>(MLRA 122, 136)</b>
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) <b>(MLRA 127, 147, 148)</b>
<input type="checkbox"/> Dark Surface (S7)	

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> 2 cm Muck (A10) <b>(MLRA 147)</b>
<input type="checkbox"/> Coast Prairie Redox (A16) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 136, 147)</b>
<input type="checkbox"/> Red Parent Material (F21) <b>(outside MLRA 127, 147, 148)</b>
<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_
Hydric Soil Present? Yes ☒ No ☐**Remarks:**

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/14/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WWE-UP  
 Investigator(s): S. Easterly, T. Carter Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 1  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.653402 Long: -78.708674 Datum: NAD83  
 Soil Map Unit Name: CeD - Cecil sandy loam, 10 to 15 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Remarks:	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ True Aquatic Plants (B14) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) _____ Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	



**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WWE-UP

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Quercus nigra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)  Total Number of Dominant Species Across All Strata: <u>8</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>62.5%</u> (A/B)														
2. <u>Acer rubrum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>															
3. <u>Liquidambar styraciflua</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
60 = Total Cover																		
50% of total cover: <u>30</u>		20% of total cover: <u>12</u>																
Sapling/Shrub Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Acer rubrum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>110</u></td> <td>x 3 = <u>330</u></td> </tr> <tr> <td>FACU species <u>35</u></td> <td>x 4 = <u>140</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>145</u> (A)</td> <td><u>470</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.24</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>110</u>	x 3 = <u>330</u>	FACU species <u>35</u>	x 4 = <u>140</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>145</u> (A)	<u>470</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>110</u>	x 3 = <u>330</u>																	
FACU species <u>35</u>	x 4 = <u>140</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>145</u> (A)	<u>470</u> (B)																	
2. <u>Liquidambar styraciflua</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
50 = Total Cover																		
50% of total cover: <u>25</u>		20% of total cover: <u>10</u>																
Herb Stratum (Plot size: <u>15' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Ilex opaca</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  <u>Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)</u>  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Polystichum acrostichoides</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>															
3. <u>Lonicera japonica</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>															
4. <u>Ligustrum sinense</u>	<u>5</u>	<u>No</u>	<u>FACU</u>															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
35 = Total Cover																		
50% of total cover: <u>18</u>		20% of total cover: <u>7</u>																
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
_____ = Total Cover																		
50% of total cover: _____		20% of total cover: _____																
Remarks: (Include photo numbers here or on a separate sheet.)				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____														

## SOIL

Sampling Point: WWE-UP**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-12	10yr 3/4	100					Loamy/Clayey	some sand

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

☐ Histosol (A1)  
☐ Histic Epipedon (A2)  
☐ Black Histic (A3)  
☐ Hydrogen Sulfide (A4)  
☐ Stratified Layers (A5)  
☐ 2 cm Muck (A10) (**LRR N**)  
☐ Depleted Below Dark Surface (A11)  
☐ Thick Dark Surface (A12)  
☐ Sandy Mucky Mineral (S1)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Dark Surface (S7)

☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)  
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)  
☐ Loamy Mucky Mineral (F1) (**MLRA 136**)  
☐ Loamy Gleyed Matrix (F2)  
☐ Depleted Matrix (F3)  
☐ Redox Dark Surface (F6)  
☐ Depleted Dark Surface (F7)  
☐ Redox Depressions (F8)  
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)  
☐ Umbric Surface (F13) (**MLRA 122, 136**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)  
☐ Red Parent Material (F21) (**MLRA 127, 147, 148**)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16) (**MLRA 147, 148**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)  
☐ Red Parent Material (F21) (**outside MLRA 127, 147, 148**)  
☐ Very Shallow Dark Surface (F22)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No X**Remarks:**

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/15/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WWF-WET  
 Investigator(s): S. Easterly, T. Carter Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): convave Slope (%): 1  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.658437 Long: -78.702004 Datum: NAD83  
 Soil Map Unit Name: WaC - Wagram loamy sand, 6 to 10 percent slopes NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes <u>X</u>	No _____	
Remarks:			

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ True Aquatic Plants (B14) <u>X</u> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <u>X</u> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) <u>X</u> Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <u>X</u> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: Surface Water in wetland but not where data point was taken.		



**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WWF-WET

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>10</u> (A)  Total Number of Dominant Species Across All Strata: <u>13</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>76.9%</u> (A/B)																
2. <u>Quercus nigra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Liquidambar styraciflua</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>																	
4. <u>Ulmus americana</u>	<u>10</u>	<u>No</u>	<u>FACW</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
90 = Total Cover																				
50% of total cover: <u>45</u>		20% of total cover: <u>18</u>																		
<b>Sapling/Shrub Stratum (Plot size: <u>30' r</u>)</b>																				
1. <u>Ligustrum sinense</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>50</u></td> <td>x 2 = <u>100</u></td> </tr> <tr> <td>FAC species <u>150</u></td> <td>x 3 = <u>450</u></td> </tr> <tr> <td>FACU species <u>40</u></td> <td>x 4 = <u>160</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>240</u> (A)</td> <td><u>710</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.96</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>50</u>	x 2 = <u>100</u>	FAC species <u>150</u>	x 3 = <u>450</u>	FACU species <u>40</u>	x 4 = <u>160</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>240</u> (A)	<u>710</u> (B)	Prevalence Index = B/A = <u>2.96</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>50</u>	x 2 = <u>100</u>																			
FAC species <u>150</u>	x 3 = <u>450</u>																			
FACU species <u>40</u>	x 4 = <u>160</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>240</u> (A)	<u>710</u> (B)																			
Prevalence Index = B/A = <u>2.96</u>																				
2. <u>Acer rubrum</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
30 = Total Cover																				
50% of total cover: <u>15</u>		20% of total cover: <u>6</u>																		
<b>Herb Stratum (Plot size: <u>15' r</u>)</b>																				
1. <u>Arundinaria gigantea</u>	<u>40</u>	<u>Yes</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>X</u> <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)</u>  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Microstegium vimineum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Rubus argutus</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
4. <u>Smilax rotundifolia</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
5. <u>Quercus phellos</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
6. <u>Quercus nigra</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
7. <u>Parthenocissus quinquefolia</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
8. <u>Toxicodendron radicans</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
9. _____	_____	_____	_____	<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
120 = Total Cover																				
50% of total cover: <u>60</u>		20% of total cover: <u>24</u>																		
<b>Woody Vine Stratum (Plot size: _____)</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____		20% of total cover: _____																		
Remarks: (Include photo numbers here or on a separate sheet.)																				

## SOIL

Sampling Point: WWF-WET

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-12	10yr 4/1	90	5yr 4/6	10	C	M	Loamy/Clayey	Prominent redox concentrations

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) <b>(MLRA 136)</b>
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 2 cm Muck (A10) <b>(LRR N)</b>	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b>
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) <b>(MLRA 122, 136)</b>
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) <b>(MLRA 127, 147, 148)</b>
<input type="checkbox"/> Dark Surface (S7)	

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> 2 cm Muck (A10) <b>(MLRA 147)</b>
<input type="checkbox"/> Coast Prairie Redox (A16) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 136, 147)</b>
<input type="checkbox"/> Red Parent Material (F21) <b>(outside MLRA 127, 147, 148)</b>
<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_
Hydric Soil Present? Yes ☒ No ☐**Remarks:**

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/15/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WWF-UP  
 Investigator(s): S. Easterly, T. Carter Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): convex Slope (%): 1  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.658515 Long: -78.701979 Datum: NAD83  
 Soil Map Unit Name: MeA - Mantachie sandy loam, 0 to 2 percent slopes, rarely flooded NWI classification: UPL  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Remarks:	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ True Aquatic Plants (B14) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) _____ Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	



**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WWF-UP

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)																
2. <u>Liquidambar styraciflua</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Pinus taeda</u>	<u>5</u>	<u>No</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
<u>35</u> =Total Cover																				
50% of total cover: <u>18</u>		20% of total cover: <u>7</u>																		
<b>Sapling/Shrub Stratum (Plot size: <u>30' r</u> )</b>																				
1. <u>Acer rubrum</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>55</u></td> <td>x 3 = <u>165</u></td> </tr> <tr> <td>FACU species <u>75</u></td> <td>x 4 = <u>300</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>130</u> (A)</td> <td><u>465</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.58</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>55</u>	x 3 = <u>165</u>	FACU species <u>75</u>	x 4 = <u>300</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>130</u> (A)	<u>465</u> (B)	Prevalence Index = B/A = <u>3.58</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>55</u>	x 3 = <u>165</u>																			
FACU species <u>75</u>	x 4 = <u>300</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>130</u> (A)	<u>465</u> (B)																			
Prevalence Index = B/A = <u>3.58</u>																				
2. <u>Liquidambar styraciflua</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Ligustrum sinense</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
<u>25</u> =Total Cover																				
50% of total cover: <u>13</u>		20% of total cover: <u>5</u>																		
<b>Herb Stratum (Plot size: <u>15' r</u> )</b>																				
1. <u>Schedonorus arundinaceus</u>	<u>60</u>	<u>Yes</u>	<u>FACU</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Plantago major</u>	<u>10</u>	<u>No</u>	<u>FACU</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
<u>70</u> =Total Cover																				
50% of total cover: <u>35</u>		20% of total cover: <u>14</u>																		
<b>Woody Vine Stratum (Plot size: _____ )</b>																				
1. _____	_____	_____	_____	<b>Definitions of Four Vegetation Strata:</b> <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____	_____	_____	_____																	
_____	_____	_____	_____																	
_____ =Total Cover																				
50% of total cover: _____		20% of total cover: _____																		
Remarks: (Include photo numbers here or on a separate sheet.)																				

## SOIL

Sampling Point: WWF-UP**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-12	10yr 3/4	100						

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) <b>(MLRA 136)</b>
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 2 cm Muck (A10) <b>(LRR N)</b>	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b>
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) <b>(MLRA 122, 136)</b>
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) <b>(MLRA 127, 147, 148)</b>
<input type="checkbox"/> Dark Surface (S7)	

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> 2 cm Muck (A10) <b>(MLRA 147)</b>
<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Piedmont Floodplain Soils (F19)
<input type="checkbox"/> <b>(MLRA 136, 147)</b>
<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> <b>(outside MLRA 127, 147, 148)</b>
<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_Hydric Soil Present? Yes \_\_\_\_\_ No X**Remarks:**

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/16/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WWG-WET  
 Investigator(s): S. Easterly, T. Carter Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.778017 Long: -78.509199 Datum: NAD83  
 Soil Map Unit Name: ApD - Appling sandy loam, 10 to 15 percent slopes NWI classification: PSS

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____
Remarks:	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <u>X</u> Surface Water (A1) _____ True Aquatic Plants (B14) <u>X</u> High Water Table (A2) <u>X</u> Hydrogen Sulfide Odor (C1) <u>X</u> Saturation (A3) <u>X</u> Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) <u>X</u> Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <u>X</u> Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: Surface water in wetland but not where datapoint taken.	



**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WWG-WET

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>3</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
=Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>70</u></td> <td>x 2 = <u>140</u></td> </tr> <tr> <td>FAC species <u>60</u></td> <td>x 3 = <u>180</u></td> </tr> <tr> <td>FACU species <u>50</u></td> <td>x 4 = <u>200</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>180</u> (A)</td> <td><u>520</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.89</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>70</u>	x 2 = <u>140</u>	FAC species <u>60</u>	x 3 = <u>180</u>	FACU species <u>50</u>	x 4 = <u>200</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>180</u> (A)	<u>520</u> (B)	Prevalence Index = B/A = <u>2.89</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>70</u>	x 2 = <u>140</u>																			
FAC species <u>60</u>	x 3 = <u>180</u>																			
FACU species <u>50</u>	x 4 = <u>200</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>180</u> (A)	<u>520</u> (B)																			
Prevalence Index = B/A = <u>2.89</u>																				
50% of total cover: _____		20% of total cover: _____																		
<b>Sapling/Shrub Stratum (Plot size: <u>30' r</u>)</b>																				
1. <u>Ilex opaca</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>X</u> <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  <u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
2. <u>Acer rubrum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Liquidambar styraciflua</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																	
4. <u>Ligustrum sinense</u>	<u>10</u>	<u>No</u>	<u>FACU</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
=Total Cover																				
50% of total cover: _____		20% of total cover: _____																		
<b>Herb Stratum (Plot size: <u>15' r</u>)</b>																				
1. <u>Arundinaria gigantea</u>	<u>70</u>	<u>Yes</u>	<u>FACW</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
2. <u>Smilax rotundifolia</u>	<u>20</u>	<u>No</u>	<u>FAC</u>																	
3. <u>Ilex opaca</u>	<u>20</u>	<u>No</u>	<u>FACU</u>																	
4. <u>Vitis rotundifolia</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
=Total Cover																				
50% of total cover: _____		20% of total cover: _____																		
<b>Woody Vine Stratum (Plot size: _____)</b>																				
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
=Total Cover																				
50% of total cover: _____		20% of total cover: _____																		
Remarks: (Include photo numbers here or on a separate sheet.)																				

## SOIL

Sampling Point: WWG-WET**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-8	10yr 4/2	90	5yr 4/6	10	C	M	Loamy/Clayey	Prominent redox concentrations
8-14	10yr 3/1	100					Loamy/Clayey	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) <b>(MLRA 136)</b>
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 2 cm Muck (A10) <b>(LRR N)</b>	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b>
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) <b>(MLRA 122, 136)</b>
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) <b>(MLRA 127, 147, 148)</b>
<input type="checkbox"/> Dark Surface (S7)	

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> 2 cm Muck (A10) <b>(MLRA 147)</b>
<input type="checkbox"/> Coast Prairie Redox (A16) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 136, 147)</b>
<input type="checkbox"/> Red Parent Material (F21) <b>(outside MLRA 127, 147, 148)</b>
<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_
Hydric Soil Present? Yes ☒ No ☐**Remarks:**

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/16/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WWG-UP  
 Investigator(s): S. Easterly, T. Carter Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): slope Slope (%): 1  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.778098 Long: -78.509125 Datum: NAD83  
 Soil Map Unit Name: ApD - Appling sandy loam, 10 to 15 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>	
Remarks:		

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ True Aquatic Plants (B14) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) _____ Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks:	



**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WWG-UP

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Carya tomentosa</u>	<u>20</u>	<u>Yes</u>	<u>UPL</u>	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)  Total Number of Dominant Species Across All Strata: <u>10</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>30.0%</u> (A/B)																
2. <u>Quercus rubra</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Acer rubrum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																	
4. <u>Liquidambar styraciflua</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																	
5. <u>Quercus nigra</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
70 =Total Cover																				
50% of total cover: <u>35</u>		20% of total cover: <u>14</u>																		
<b>Sapling/Shrub Stratum (Plot size: <u>30' r</u> )</b>																				
1. <u>Cornus florida</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>70</u></td> <td>x 3 = <u>210</u></td> </tr> <tr> <td>FACU species <u>70</u></td> <td>x 4 = <u>280</u></td> </tr> <tr> <td>UPL species <u>20</u></td> <td>x 5 = <u>100</u></td> </tr> <tr> <td>Column Totals: <u>160</u> (A)</td> <td><u>590</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.69</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>70</u>	x 3 = <u>210</u>	FACU species <u>70</u>	x 4 = <u>280</u>	UPL species <u>20</u>	x 5 = <u>100</u>	Column Totals: <u>160</u> (A)	<u>590</u> (B)	Prevalence Index = B/A = <u>3.69</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>70</u>	x 3 = <u>210</u>																			
FACU species <u>70</u>	x 4 = <u>280</u>																			
UPL species <u>20</u>	x 5 = <u>100</u>																			
Column Totals: <u>160</u> (A)	<u>590</u> (B)																			
Prevalence Index = B/A = <u>3.69</u>																				
2. <u>Juniperus virginiana</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Ligustrum sinense</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
30 =Total Cover																				
50% of total cover: <u>15</u>		20% of total cover: <u>6</u>																		
<b>Herb Stratum (Plot size: <u>15' r</u> )</b>																				
1. <u>Toxicodendron radicans</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  <u>        </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Acer rubrum</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Liquidambar styraciflua</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
4. <u>Quercus alba</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
5. <u>Lonicera japonica</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
60 =Total Cover																				
50% of total cover: <u>30</u>		20% of total cover: <u>12</u>																		
<b>Woody Vine Stratum (Plot size: <u>        </u> )</b>																				
1. _____	_____	_____	_____	<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
=Total Cover																				
50% of total cover: <u>        </u>		20% of total cover: <u>        </u>																		
<b>Hydrophytic Vegetation Present?</b> <b>Yes</b> <u>        </u> <b>No</b> <u>  X  </u>																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

## SOIL

Sampling Point: WWG-UP**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-12	10yr 4/4	100					Loamy/Clayey	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

☐ Histosol (A1)  
☐ Histic Epipedon (A2)  
☐ Black Histic (A3)  
☐ Hydrogen Sulfide (A4)  
☐ Stratified Layers (A5)  
☐ 2 cm Muck (A10) (**LRR N**)  
☐ Depleted Below Dark Surface (A11)  
☐ Thick Dark Surface (A12)  
☐ Sandy Mucky Mineral (S1)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)  
☐ Dark Surface (S7)

☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)  
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)  
☐ Loamy Mucky Mineral (F1) (**MLRA 136**)  
☐ Loamy Gleyed Matrix (F2)  
☐ Depleted Matrix (F3)  
☐ Redox Dark Surface (F6)  
☐ Depleted Dark Surface (F7)  
☐ Redox Depressions (F8)  
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)  
☐ Umbric Surface (F13) (**MLRA 122, 136**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)  
☐ Red Parent Material (F21) (**MLRA 127, 147, 148**)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16) (**MLRA 147, 148**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)  
☐ Red Parent Material (F21) (**outside MLRA 127, 147, 148**)  
☐ Very Shallow Dark Surface (F22)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No X**Remarks:**

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/16/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WWH-WET  
 Investigator(s): V. Miller, J. Garvey Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 2  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.756933 Long: -78.507844 Datum: NAD83  
 Soil Map Unit Name: WnA - Wehadkee silt loam, 0 to 2 percent slopes, frequently flooded NWI classification: PFO  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes <u>X</u>	No _____	
Remarks:			

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ True Aquatic Plants (B14) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) _____ Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) <u>X</u> Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <u>X</u> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <u>X</u> Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WWH-WET

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	70	Yes	FAC	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)  Total Number of Dominant Species Across All Strata: <u>7</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>71.4%</u> (A/B)																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	70	=Total Cover		<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>5</u></td> <td>x 1 = <u>5</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>202</u></td> <td>x 3 = <u>606</u></td> </tr> <tr> <td>FACU species <u>12</u></td> <td>x 4 = <u>48</u></td> </tr> <tr> <td>UPL species <u>50</u></td> <td>x 5 = <u>250</u></td> </tr> <tr> <td>Column Totals: <u>269</u> (A)</td> <td><u>909</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.38</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>5</u>	x 1 = <u>5</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>202</u>	x 3 = <u>606</u>	FACU species <u>12</u>	x 4 = <u>48</u>	UPL species <u>50</u>	x 5 = <u>250</u>	Column Totals: <u>269</u> (A)	<u>909</u> (B)	Prevalence Index = B/A = <u>3.38</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>5</u>	x 1 = <u>5</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>202</u>	x 3 = <u>606</u>																			
FACU species <u>12</u>	x 4 = <u>48</u>																			
UPL species <u>50</u>	x 5 = <u>250</u>																			
Column Totals: <u>269</u> (A)	<u>909</u> (B)																			
Prevalence Index = B/A = <u>3.38</u>																				
50% of total cover: <u>35</u>	20% of total cover: <u>14</u>																			
<b>Sapling/Shrub Stratum (Plot size: _____)</b>				<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  <u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
1. <u>Ligustrum japonicum</u>	40	Yes	UPL																	
2. <u>Liquidambar styraciflua</u>	10	No	FAC																	
3. <u>Ulmus rubra</u>	10	No	FAC																	
4. _____																				
5. _____																				
6. _____																				
	60	=Total Cover																		
50% of total cover: <u>30</u>	20% of total cover: <u>12</u>																			
<b>Herb Stratum (Plot size: _____)</b>				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
1. <u>Microstegium vimineum</u>	60	Yes	FAC																	
2. <u>Athyrium asplenoides</u>	40	Yes	FAC																	
3. <u>Saururus cernuus</u>	5	No	OBL																	
4. <u>Ligustrum japonicum</u>	10	No	UPL																	
5. <u>Rubus argutus</u>	5	No	FACU																	
6. _____																				
	120	=Total Cover																		
50% of total cover: <u>60</u>	20% of total cover: <u>24</u>																			
<b>Woody Vine Stratum (Plot size: _____)</b>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____																
1. <u>Parthenocissus quinquefolia</u>	2	No	FACU																	
2. <u>Campsis radicans</u>	2	No	FAC																	
3. <u>Toxicodendron radicans</u>	5	Yes	FAC																	
4. <u>Lonicera japonica</u>	5	Yes	FACU																	
5. <u>Smilax rotundifolia</u>	5	Yes	FAC																	
	19	=Total Cover																		
50% of total cover: <u>10</u>	20% of total cover: <u>4</u>																			
Remarks: (Include photo numbers here or on a separate sheet.)																				

## SOIL

Sampling Point: WWH-WET

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-14	10yr 4/1	80	10yr 4/6	20	C	PL	Loamy/Clayey	Prominent redox concentrations

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) <b>(MLRA 136)</b>
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 2 cm Muck (A10) <b>(LRR N)</b>	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b>
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) <b>(MLRA 122, 136)</b>
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) <b>(MLRA 127, 147, 148)</b>
<input type="checkbox"/> Dark Surface (S7)	

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> 2 cm Muck (A10) <b>(MLRA 147)</b>
<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Piedmont Floodplain Soils (F19)
<input type="checkbox"/> <b>(MLRA 136, 147)</b>
<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> <b>(outside MLRA 127, 147, 148)</b>
<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_
Hydric Soil Present?      Yes ☒      No ☐**Remarks:**

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/16/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WWI-WET  
 Investigator(s): V. Miller, J. Garvey Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 1  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.756135 Long: -78.507693 Datum: NAD83  
 Soil Map Unit Name: WnA - Wehadkee silt loam, 0 to 2 percent slopes, frequently flooded NWI classification: PFO  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes <u>X</u>	No _____	
Remarks:			

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ True Aquatic Plants (B14) <u>X</u> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <u>X</u> Saturation (A3) <u>X</u> Oxidized Rhizospheres on Living Roots (C3) <u>X</u> Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) <u>X</u> Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <u>X</u> Drainage Patterns (B10) <u>X</u> Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <u>X</u> Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>6</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>6</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WWI-WET

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	40	Yes	FAC	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A)  Total Number of Dominant Species Across All Strata: <u>7</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>85.7%</u> (A/B)																
2. <u>Liquidambar styraciflua</u>	15	Yes	FAC																	
3. <u>Ulmus rubra</u>	15	Yes	FAC																	
4. _____																				
5. _____																				
6. _____																				
7. _____																				
70 = Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>60</u></td> <td>x 1 = <u>60</u></td> </tr> <tr> <td>FACW species <u>7</u></td> <td>x 2 = <u>14</u></td> </tr> <tr> <td>FAC species <u>135</u></td> <td>x 3 = <u>405</u></td> </tr> <tr> <td>FACU species <u>40</u></td> <td>x 4 = <u>160</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>242</u> (A)</td> <td><u>639</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.64</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>60</u>	x 1 = <u>60</u>	FACW species <u>7</u>	x 2 = <u>14</u>	FAC species <u>135</u>	x 3 = <u>405</u>	FACU species <u>40</u>	x 4 = <u>160</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>242</u> (A)	<u>639</u> (B)	Prevalence Index = B/A = <u>2.64</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>60</u>	x 1 = <u>60</u>																			
FACW species <u>7</u>	x 2 = <u>14</u>																			
FAC species <u>135</u>	x 3 = <u>405</u>																			
FACU species <u>40</u>	x 4 = <u>160</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>242</u> (A)	<u>639</u> (B)																			
Prevalence Index = B/A = <u>2.64</u>																				
50% of total cover: <u>35</u> 20% of total cover: <u>14</u>																				
<b>Sapling/Shrub Stratum (Plot size: <u>30' r</u>)</b>																				
1. <u>Ligustrum sinense</u>	40	Yes	FACU	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>X</u> <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  <u>Problematic Hydrophytic Vegetation</u> <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
40 = Total Cover																				
50% of total cover: <u>20</u> 20% of total cover: <u>8</u>																				
<b>Herb Stratum (Plot size: <u>15' r</u>)</b>																				
1. <u>Saururus cernuus</u>	60	Yes	OBL	<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
2. <u>Microstegium vimineum</u>	50	Yes	FAC																	
3. <u>Athyrium asplenoides</u>	10	No	FAC																	
4. <u>Lobelia cardinalis</u>	5	No	FACW																	
5. <u>Pilea pumila</u>	2	No	FACW																	
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
127 = Total Cover																				
50% of total cover: <u>64</u> 20% of total cover: <u>26</u>																				
<b>Woody Vine Stratum (Plot size: <u>30'r</u>)</b>																				
1. <u>Vitis rotundifolia</u>	5	Yes	FAC	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
5 = Total Cover																				
50% of total cover: <u>3</u> 20% of total cover: <u>1</u>																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

## SOIL

Sampling Point: WWI-WET

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-2	10yr 4/2	60	10yr 3/6	40	C	PL	Loamy/Clayey	Prominent redox concentrations
2-12	10yr 5/1	60	10yr 4/6	40	C	PL	Loamy/Clayey	Prominent redox concentrations
12-14	10yr 4/1	60	10yr 4/4	40	C	PL	Loamy/Clayey	Distinct redox concentrations

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) <b>(MLRA 136)</b>
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 2 cm Muck (A10) <b>(LRR N)</b>	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b>
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) <b>(MLRA 122, 136)</b>
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) <b>(MLRA 127, 147, 148)</b>
<input type="checkbox"/> Dark Surface (S7)	

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> 2 cm Muck (A10) <b>(MLRA 147)</b>
<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Piedmont Floodplain Soils (F19)
<input type="checkbox"/> <b>(MLRA 136, 147)</b>
<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> <b>(outside MLRA 127, 147, 148)</b>
<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_
Hydric Soil Present? Yes ☒ No ☐**Remarks:**

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

# WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: C540 City/County: Wake Sampling Date: 8/16/17  
 Applicant/Owner: NCDOT State: NC Sampling Point: WWW/WWI-UP  
 Investigator(s): V. Miller, J. Garvey Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): 5  
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 35.756601 Long: -78.50775 Datum: NAD83  
 Soil Map Unit Name: WnA - Wehadkee silt loam, 0 to 2 percent slopes, frequently flooded NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Remarks:	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ True Aquatic Plants (B14) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) _____ Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	



**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WWH/WWI-UP

Tree Stratum (Plot size: <u>30' r</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u><i>Ilex opaca</i></u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A)  Total Number of Dominant Species Across All Strata: <u>9</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)																
2. <u><i>Betula nigra</i></u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>																	
3. <u><i>Quercus alba</i></u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>																	
4. <u><i>Quercus nigra</i></u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
80 = Total Cover																				
50% of total cover: <u>40</u>		20% of total cover: <u>16</u>																		
<b>Sapling/Shrub Stratum (Plot size: <u>30' r</u>)</b>																				
1. <u><i>Ligustrum sinense</i></u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>20</u></td> <td>x 2 = <u>40</u></td> </tr> <tr> <td>FAC species <u>120</u></td> <td>x 3 = <u>360</u></td> </tr> <tr> <td>FACU species <u>75</u></td> <td>x 4 = <u>300</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>215</u> (A)</td> <td><u>700</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.26</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>20</u>	x 2 = <u>40</u>	FAC species <u>120</u>	x 3 = <u>360</u>	FACU species <u>75</u>	x 4 = <u>300</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>215</u> (A)	<u>700</u> (B)	Prevalence Index = B/A = <u>3.26</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>20</u>	x 2 = <u>40</u>																			
FAC species <u>120</u>	x 3 = <u>360</u>																			
FACU species <u>75</u>	x 4 = <u>300</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>215</u> (A)	<u>700</u> (B)																			
Prevalence Index = B/A = <u>3.26</u>																				
2. <u><i>Liquidambar styraciflua</i></u>	<u>5</u>	<u>No</u>	<u>FAC</u>																	
3. <u><i>Rubus argutus</i></u>	<u>5</u>	<u>No</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
30 = Total Cover																				
50% of total cover: <u>15</u>		20% of total cover: <u>6</u>																		
<b>Herb Stratum (Plot size: <u>15' r</u>)</b>																				
1. <u><i>Vitis rotundifolia</i></u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  <u>Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)</u>  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u><i>Microstegium vimineum</i></u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u><i>Toxicodendron radicans</i></u>	<u>5</u>	<u>No</u>	<u>FAC</u>																	
4. <u><i>Lonicera japonica</i></u>	<u>5</u>	<u>No</u>	<u>FACU</u>																	
5. <u><i>Rubus argutus</i></u>	<u>5</u>	<u>No</u>	<u>FACU</u>																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
95 = Total Cover																				
50% of total cover: <u>48</u>		20% of total cover: <u>19</u>																		
<b>Woody Vine Stratum (Plot size: <u>30' r</u>)</b>																				
1. <u><i>Vitis rotundifolia</i></u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
2. <u><i>Smilax rotundifolia</i></u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
10 = Total Cover																				
50% of total cover: <u>5</u>		20% of total cover: <u>2</u>																		
<b>Hydrophytic Vegetation Present?</b> <b>Yes</b> <u>X</u> <b>No</b> _____																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

## SOIL

Sampling Point: VWH/WWI-U

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10yr 4/3	100					Sandy	
6-14	10yr 6/4	100					Sandy	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) <b>(MLRA 136)</b>
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 2 cm Muck (A10) <b>(LRR N)</b>	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b>
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) <b>(MLRA 122, 136)</b>
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) <b>(MLRA 127, 147, 148)</b>
<input type="checkbox"/> Dark Surface (S7)	

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> 2 cm Muck (A10) <b>(MLRA 147)</b>
<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> <b>(MLRA 147, 148)</b>
<input type="checkbox"/> Piedmont Floodplain Soils (F19)
<input type="checkbox"/> <b>(MLRA 136, 147)</b>
<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> <b>(outside MLRA 127, 147, 148)</b>
<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_
Hydric Soil Present? Yes \_\_\_\_\_ No X**Remarks:**

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.